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SERVIA, BOSNIA, AND BULGARIA.*

ONCE more there is a hope that the Turkish invaders, with their Fanariote following, may be expelled from the unfortunate Slavonian and Bulgarian provinces, where they have long rendered government, good or bad, an impossibility.

Horrible as the Turkish occupation of these provinces has always been, it has in this century become ten times worse than it ever was before. For when the Sultans led their own armies, and even as late as 1851 in Bosnia, they permitted some sort of government by the people whose country they overran, provided that the governors had become renegade Muhammadans. But since the days of Mahmûd II. the Turks have lost the last vestige of such savage virtues as they once possessed, and Stambul is a centre of corruption and iniquity, fed by the pillage of the ruined provinces. In Bosnia and Herzegóvina there has ceased to be a government. The provinces are occupied by a few Osmanli officials who, with a brutal soldiery, help the Fanariote Bishops and Farmers of Revenue from Constantinople to plunder and maltreat the people. These creatures are the scum of the Levant; and they, not the native Muhammadans, are the "Turks," or rather Stambulis, who, as Mr. Gladstone has declared, must be cleared out of the country. The occupation of these provinces direct from Constantinople is intolerable, and those who would perpetuate it, under whatever false promises of amendment and reform, are simply doing their best to ensure the occurrence of periodical outbreaks and massacres.

Servia and Rumania have secured that self-government which Bosnia, Herzegóvina, and Bulgaria must have. For 400 years the latter provinces have writhed under the long agony from which the two former have escaped; and the time seems to have come at last for the deliverance of these unhappy people.

If the Slavonians and Bulgarians are, as their enemies declare, more vile than their Muslim oppressors, it is the Turkish misrule that has so debased them. For, unlike the Turks, the Slavonians are capable of becoming a civilised and cultivated people. Justinian was a Slavonian peasant; the Paulician missionaries of Bosnia spread their peculiar tenets over the south of Europe, and Stephen Dushan—the King of Servia in the fourteenth century—was a legislator as well as a conqueror. Nor were the Bulgarians, though of mixed Turkish and Slavonic extraction, less capable of civilised culture in the days of their prosperity; and their King Simeon, in the ninth century, though a warrior, was also a student of Demosthenes and Aristotle. Let the same freedom be restored to them as they once enjoyed, and in due time the sure fruits of that blessing will appear.

They are downtrodden slaves, writhing under the hideous terrorism of the Turkish horde of invaders; but still, in all these centuries, they have been slaves ever struggling for freedom, and they may exclaim with Alfieri:

"Servi siam si, ma servi ognor frementi."

The Servians have always resisted their oppressors bravely; they took part in the victory of Nissa, when the Turks were defeated; and when, after the crushing disaster of Kassowa, they fell under the yoke, their subjugation was due not so much to the Turks as to the Janissaries, their own renegade countrymen. Nothing daunted, the Servians again gathered to the standard of John Hunyad, in 1444, only once more to be overpowered after the fatal battle of Varna. Then, at length, they were conquered and converted into a rayah of unarmed people; but they never lost their national feeling, and the mountains always contained strong bands of *heyducs* or robbers, who were befriended by their countrymen. One of the forms of oppression, an oppression under which Bosnia and Herzegóvina are still groaning, was the imposition of Greek Bishops over the Servian Church in 1737—hirelings from Constantinople, who bought the offices from the Turks, and held them by extortion and bribes. Treated as the most degraded slaves by the conquerors, yet the national spirit of the Servians remained alive and unsubdued; and they sought the means of opposing their tyrants on every opportunity. Thus Joseph II. raised a regiment of Servian volunteers, who, in 1789, served at the siege of Belgrad.

The day of freedom dawned on Servia when the Turkish organisation became rotten to the core, through the effeminacy of the Sultans and the corruption of the Pashas. The years 1806 and 1815 were for Servia what, we trust, the year 1876 will be for Bosnia, Herzegóvina, and Bulgaria. The work began in the same way. In 1803, pretending to fear an insurrection, the Dahis, or leaders of the Janissaries, commenced a massacre of all the *Kneses* or Elders of villages. The able-bodied Servians then fled to the

* Ranke's *History of Servia*, translated by Mrs. Kerr. *Through Bosnia and the Herzegóvina, with an historical review of Bosnia*, by Arthur J. Evans, F.S.A. (Longmans, 1876).

retreats of the *heyducs* in the mountains. Among them was Kara George, the son of a peasant living near Kraguyevatz. He was born in 1769, and, when the insurrection broke out, he was elected leader of the Servians, and captured Belgrad in 1805. In the following year the Turks crossed the Drina, and commenced their usual devastations, but their leader Hajji Beg was entirely defeated by Kara George. Servia was now free. The patriot leaders, among whom was Milosh Obrenovich, grandfather of the present Prince Milan, became Hospodars of districts; a *Skupchina* or General Assembly met at Belgrad; and courts of justice and a high school were established by Dr. Philippovich, the Secretary of the Senate.

In 1809 the Servians invaded Bosnia, in order to form a junction with the Montenegrins, and Kara George defeated the Turks at Suwodol on the Lim, organised an insurrection in Montenegro and Herzegóvina, and advanced as far as Novibazar. But a Turkish army from Nish attacked Servia on the line of the Morava, just as the Turks are doing now. Kara George, therefore, fell back and faced the new foe at Deligrad, intending to defend the right bank of the Morava. The Pasha of Nish advanced to that river with an army of 30,000 men, and took Krushevatz, while the Servians barely numbered 7,000. But the gallant Colonel O'Rourke joined Kara George, at this critical time, with 13,000 Russians. The Turks were repulsed both on the side of the Morava and the Drina; and by October 1810 the oppressors had once more been hurled back at all points.

In the peace of Bukarest the gallant little nation was to some extent neglected by the Russian Government. A complete amnesty was granted to the Servians, but the Turks were allowed to occupy their fortresses, and, though the internal government was to be administered by Servians, the Turks retained the power of exacting imposts. The cruel part of this arrangement was that the Russians must have known, by long experience, that the Turks are utterly faithless. The moment the Russian army was withdrawn to cut off the retreat of Napoleon, the perfidious barbarians broke all their pledges, and once more poured their murderous hordes into Servia, when utterly unprepared. The country was overrun in October 1813, the Turks re-entered Belgrad, and Kara George fled across the Danube, with all the senators of the *Skupchina*. The Turks became possessed of every town in Servia, and only one Hospodar remained in the country, namely, Milosh Obrenovich. He was allowed to retain his arms, and assisted the Turks to quell further opposition. His action was, however, on the whole, beneficial to his own countrymen.

The Turks were now able to work their own accursed wills, as is their wont, and as they have ever done, before and since, on like occasions, down to this year of grace 1876. They roasted the Servians on spits, tied bags of ashes round the women's heads and beat them till they were suffocated, tied the men up by their hands and feet and hung heavy stones round their middles, and committed other atrocities too horrible to mention.

At last, in 1815, even Milosh Obrenovich rose in revolt; and defeated the Turkish army in the mountains near Syenitza. Great part of the country was cleared of the invaders, and Servian Deputies were sent to the Congress of Vienna. But they were received with little sympathy, and were told at the English Embassy, with harshness and scorn, to apply to Russia. The Servians were, however, able to hold their own without foreign aid, and, though the Turks retained the fortresses, the Servians secured their liberties and the right to bear arms. Milosh became the ruler of the country, collected the imposts, and forwarded the tribute to Constantinople. His seat of Government was at Kraguyevatz, as the Turks were in Belgrad, which fortress they did not finally evacuate until 1867. By the treaty of Adrianople, in 1829, Servia secured the right of self-government, including the election of her own bishops. But she was still subjected to a degrading tribute and to nominal allegiance to Constantinople, which ought now to cease.

After a long and fiery ordeal, the gallant little State broke from a slavery of nearly 400 years, and secured its own freedom in the face of countless odds. "Since then, the Turks being gone, a free constitution has been developed, the population has doubled, and, until the outbreak of this war, the country was a garden of peace and plenty. Poverty does not exist, and crime of all kinds is rare." Such is the testimony of an eyewitness who visited the country this year.*

By the Peace of Adrianople an independent administration was secured to Moldavia and Wallachia, under the guarantee of Russia, and thus another State, that of Rumania, was for ever secured from Turkish oppression. As in Servia, so in Rumania, the Turkish officials, and their Fanariote jackals, were cleared out "bag and baggage."

The glorious struggle of Servia for independence is an example for the other ruined and downtrodden provinces to follow. Bosnia also possesses her history as an independent kingdom, and although most of her nobles became renegades after the country was overrun by Turks, in order to save their estates, they are Slavonians by race and language. As the genealogical register of the Servian kings, written in the thirteenth century, is still preserved in the monastery on Mount Athos, so also the "Book of Arms" of the old Bosnian nobility is extant, and was seen by Mr. Evans, in the monastery at Foinica. The descendants of those nobles are now Muhammadans, but they still possess their land; and Mr. Evans assures us that "there is one thing on which the Muhammadans and Christians of Bosnia are both agreed, and that is in abhorrence of the rule of the Osmanli." The last struggle of the native Muhammadan aristocracy against the Turkish banditti was in 1851.

In some respects Bosnia and Herzegóvina are worse off than Servia ever was. They are subjected to the organised extortion of the harpies who buy their appointments at Constantinople. The Mussulmans of Bosnia may oppress the Christian peasants when the Turks are got rid of, and there may be misgovernment. But this is infinitely better than *no* government. Under the Turks there is no government; but organised robbery devastating the country, varied by periodical writhing of the victims, which is followed by massacres and hideous atrocities.

* See an interesting letter, signed D. Crawford, in the *Times* of September 20th, 1876.

This year the tension once more reached breaking point, and the victims of Turkish oppression writhed in Bulgaria and Herzegóvina. Then followed the recent atrocities, when 12,000 men, women and children were massacred in the sanjak of Philippopoli alone. These horrors are exactly similar to those committed by the Turks on the thousands of previous occasions when their victims have writhed before, during the four centuries that these barbarous hordes have been allowed by Christendom to oppress and murder the unfortunate inhabitants of the provinces they have overrun. Within living memory 30,000 people were massacred by the Turks at Chios, and as many women and children sold into slavery. In 1822 they destroyed 120 villages in Macedonia, and massacred the inhabitants. Such atrocities, under Turkish misrule, recur again and again.

Servians and Montenegrins could endure the sight no longer. They boldly entered upon the most just and most glorious conflict in which men can engage. These gallant little States resolved to strike a blow for the right; and refused to look quietly on while their brethren were tortured and massacred. All honour to them! Like Kara George and their grandsires in 1810, the Servians have taken a stand on the line of the Morava, and the whole power of the hireling army employed by the Turks has failed to move them. As Colonel O'Rourke came to the aid of the Servians in 1810, so Tchernayeff and many other sympathising Russians help them now. On the other side the Montenegrins have defeated the Turkish invaders in more than one gallantly fought action. There was a time when scores of English swords would also have been drawn to defend a cause so just and holy. When the South Americans rose against the tyranny of Spain, no less than 67 British and French officers joined the patriots, of whom 21 sacrificed their lives in the cause of freedom. Compared with Turkish misrule, the tyranny of Spain was enlightened liberality. There are Englishmen, too, though not so many, fighting in the Servian army, and English doctors and English medical aid have done equally valuable service in that good old cause for which our fathers have fought whenever and wherever it has been upheld.

The intervention of little Servia was as wise as it was chivalrous. It has brought about a state of things which will force Christendom, for very shame, to abate the Turkish nuisance. Bosnia, Herzegóvina, and Bulgaria will, we trust, at length be rescued from the barbarians who have overrun them. The difficulties of a settlement are not so great as to be insuperable. The Bosnian Muhammadans hate the Turks, and, if their rights are secured, they will, Mr. Evans tells us, not improbably make common cause with the Christians.

There are the elements of union, if the religious question can once be overcome. "We have in Bosnia," says Mr. Evans," a common language and a common national character, and that national character, whatever may be said to the contrary, is not prone to revolution. It is slow, it is stubborn, it is not easily roused, and it possesses a fund of common sense which has led a keen French observer to compare the Serbian genius with the English. The Bosnians are of a temperament admirably fitted for parliamentary government, and orderly government once established, the development of the natural resources of the country will follow." The valley of their principal river is one vast coal-field, and their mountains contain the richest veins of quicksilver in Europe, while gold, silver and iron are abundant.

It has been a long and hideous night for the ill-fated people of the Balkan Peninsula, but at length there are gleams of light betokening the approach of dawn. Englishmen, without drawing their swords, as their fathers would have done, may yet do much to hasten its coming. But, above all things, it is important that they should not be misled. When Mr. Gladstone declared that the Turks must be cleared out "bag and baggage," he did not mean the Muhammadans as such. The officials, the robbers from Stambul, that sink of corruption, whether they be Muslim or Christian; the vile crew of place-hunters, including Fanariote Bishops and Farmers of the Taxes—these are the locusts that must go, detested as they are alike by Muhammadans and Christians among the native population.

The Servians secured, by a long and desperate struggle against overwhelming odds, what the Bosnians and Bulgarians should now have: namely, the right to govern themselves. The Bulgaria which must be freed, be it understood, is the vilayet of the Danube (excepting the sanjak of Tulcha) and the sanjaks of Sliven, Philippopoli, Seres, Saloniki, and Skoplia. In the accompanying maps we have endeavoured to show the political divisions as at present existing, the density of the population, the distribution of Muhammadans, and the nationalities. We trust that they may prove useful as a contribution towards the adequate knowledge of a subject which ought to be understood by every Englishman whose duty it is to form a judgment on the most important question that has occupied public attention for many years.

DISTRIBUTION OF THE POPULATION IN THE PART OF EUROPE OVERRUN BY TURKS.

Some statistical information on the populations of that part of Eastern Europe which is now devastated by the Turkish hordes will prove acceptable at the present time. It is scarcely necessary to state that no regular census of the population has ever been taken. There have been enumerations, more or less trustworthy, of the male inhabitants, and the figures we give below are therefore merely approximations to the truth. We have largely availed ourselves of the results of Dr. Yakshity's researches, some of which have appeared in Petermann's *Mittheilungen*.*

The area and population of this part of Europe are as follows:—

	Sq. m.	Population.	Muhammadans.
Provinces still under the Turks	143,166	8,207,000	3,585,000
Servia	16,820	1,340,000	500
Rumania	46,709	4,500,000	1,000
†Montenegro ...	1,710	125,000	—
Total	208,405	14,172,000	3,586,500

* Also in Behm and Wagner's *Bevölkerung der Erde*, an annual publication invaluable to the statistician.

† Montenegro is no longer tributary.

The populations of Servia, Rumania, and Montenegro are comparatively homogeneous. In Servia there are about 155,000 Rumanians, 150,000 Bulgarians, 17,000 gipsies, 400 Jews, and a few hundred foreigners, the bulk of the population consisting of Servians. In Rumania there are, in addition to 3,640,000 Rumanians or "Valakhs," 350,000 Bulgarians, 190,000 gipsies, 210,000 Jews, 45,000 Magyars, 15,000 Russians, 8,000 Armenians, 5,000 Greeks, &c. In both countries the great bulk of the population belongs to a "National Church," independent alike of Russian or Greek patriarchs.

In those provinces which are still under the direct misrule of the Turks, the population is of a far more mixed character.

The following is an attempt at its classification:—

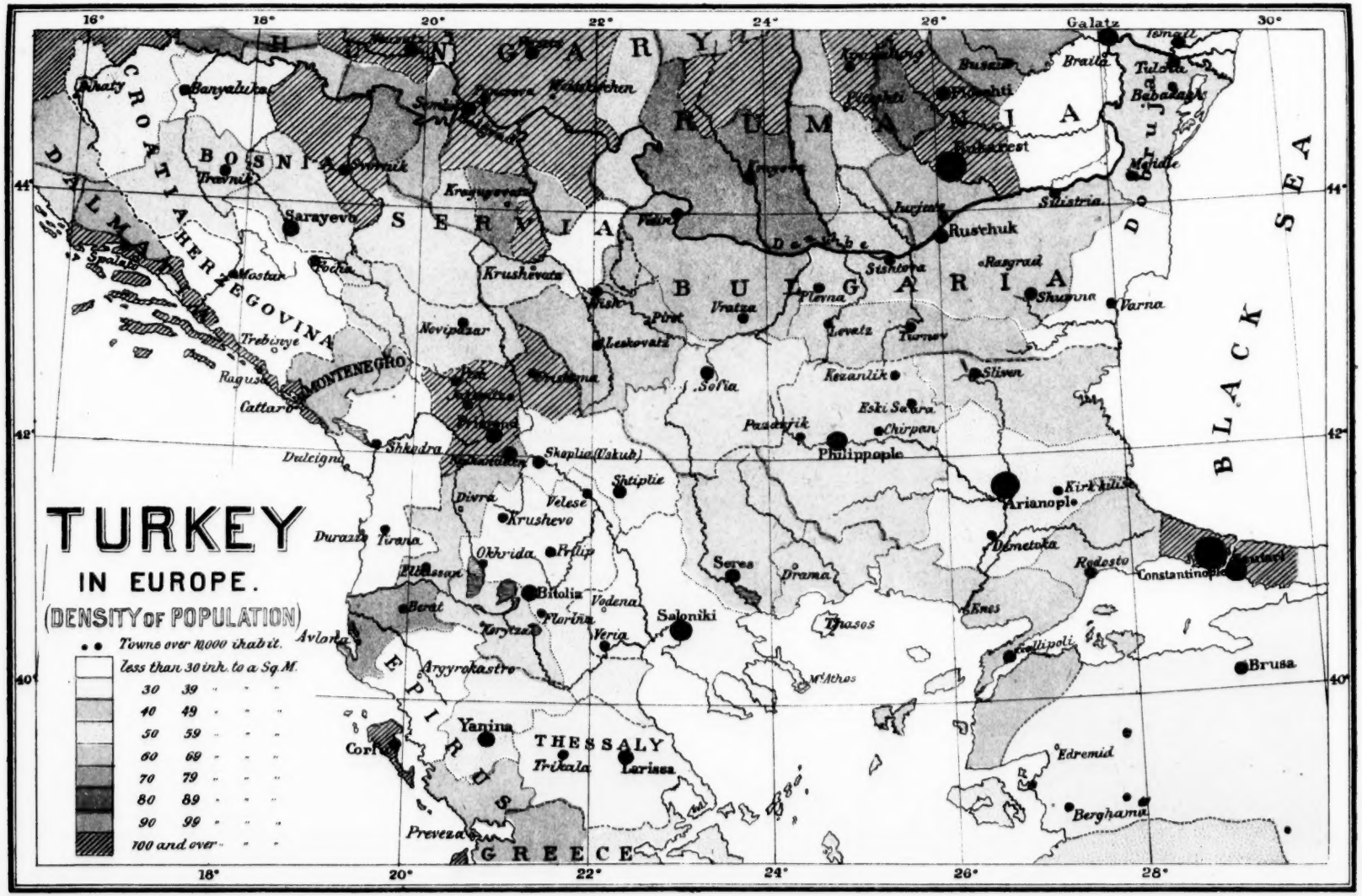
		Total Population. Number.	Per ct.	Muhammadans. Number.	Per ct.
	Turks (& Tatars)	1,388,000	17	1,388,000	39
	Circassians	144,000	2	144,000	4
	Arabs	3,000	—	3,000	—
Greco-Latin.	Greeks...	1,120,000	13	38,000	1
Greco-Latin.	Albanians	1,031,000	12	723,000	20
Greco-Latin.	Rumanians	200,000	2	—	—
Slav.	Bulgarians	2,861,000	35	790,000	22
Slav.	Servians	1,114,000	13	442,000	12
Slav.	Russians	10,000	—	—	—
	Armenians	100,000	1	—	—
	Jews	72,000	1	—	—
	Gipsies...	104,000	1	52,000	1
	Foreigners	60,000	—	5,000	—
	Total	8,207,000	100	3,585,000	100

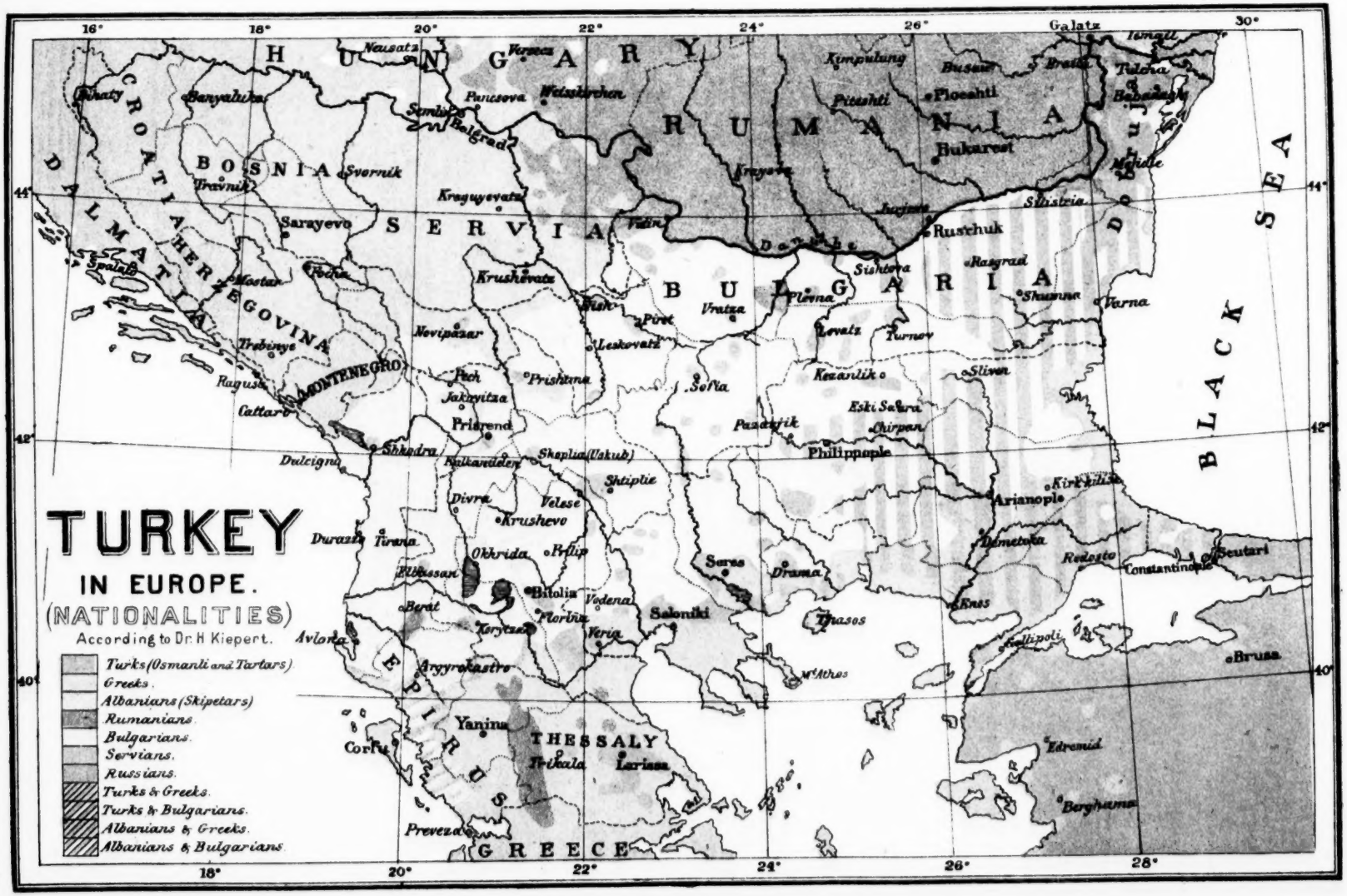
The details for the various *sanjaks* will be found in the tabular statement appended to this paper, and on the maps which accompany it we have delineated these facts graphically. One popular error must at once explode if we allow ourselves to be guided by the facts presented in this table, viz., that Turks and Muhammadans are identical. Even if we include amongst Turks the kindred Tatars settled on the Lower Danube, and a few other nondescript elements, they only constitute 17 per cent. of the total population, or 39 per cent of all the Muhammadans; and although religious ties may be stronger in some cases than are the ties of nationality, they are not always so, and there is not usually any love lost between the Osmanli and his co-religionists of other nationalities. The Muhammadans have a majority in 10 out of the 35 sanjaks into which the region is divided, but the Osmanli not in a single one. They are most numerous in the vilayets of Adrianople and Saloniki, and extend northward as far as the Danube, but nowhere are they the exclusive occupants of large districts. Their kinsmen, the Tatars, are more fortunate in this respect. Reinforced by immigrants from the Crimea, they not only constitute a majority in the sanjak of Tulcha, on the Lower Danube, but they enjoy virtual independence under a hereditary Khan. The Circassians have been allotted lands and houses (at the expense of the Bulgarians, be it understood) between the Black Sea and the eastern borders of Bosnia. The Greeks are perhaps the most influential element amongst the Christian population, and may prove the most dangerous foe to the Osmanli, for they firmly believe in their destiny. They form the majority of the population in the sanjaks of Yanina, Preveza, Trikala (Thessaly), Gallipoli and Rodosto; and in Albania they are continuously gaining ground upon the Albanians, who adopt their language and religion. These latter are partly Muhammadans, partly Christians of the Greek or Roman Church. The Rumanians are represented by Daco-Valakhs, in the north, and by Macedo, Kutzo (*i.e.*, limping, bastard) Valakhs or Zinzares, in the south. They are not sufficiently numerous to exercise a decisive influence upon the future of the empire, but would make good citizens under any regular government.

The Bulgarians are the most numerous amongst the Slavs, but they are of a mixed race, with much Hunnish blood in their veins. They may, however, be included among the Slavonic part of the population. The sanjak of Tulcha excepted, where they have been displaced by Tatars, they form the majority in the whole of the vilayet of the Danube, usually called Bulgaria, as well as in the sanjaks of Sliven, Philippopoli, Seres, Saloniki and Skoplia. The sanjaks named have a total population of 3,400,000 souls, of whom nearly 70 per cent. are Bulgarians, and they form a fine field for further extending the system of "autonomy" within the present limits of the region overrun by the Turks. Unfortunately many Bulgarians have embraced the faith of their conquerors and oppressors. The Servians include the Bosnians of the vilayet of Bosnia, the Herzegóvinans, the Raitzes in Rascia or Old Servia, and the Montenegrins. They form a compact mass, as a glance at our map will show, but in Rascia they have been losing ground for some time past, in consequence of the Albanians pushing northward. The nobles of Servia proper, within the limits of the present principality, remained Christians when their country was conquered by the Turks, but all others changed their faith in order to save their lands. They do not, however, speak Turkish, as do the Bulgarians living amongst the Turks, and the Osmanli are even more hateful to them than to their infidel compatriots.

Broadly speaking, the region in Europe, now devastated by the Turks, consists of four great ethnological divisions, viz., the countries of the Greeks, of the Bulgarians, of the Albanians, and of the Servians. The Osmanli are a relative majority only in Constantinople and in the sanjaks of Adrianople and Drama.

Vilayets and Sanjaks.	Area. Sq. m.	Population (in thousands). Total.	Muham.	Muhammadan. Per ct.	Inhabitants to a Sq. m.
Constantinople ...	1,040	377	200	53	363
Adrianople	6,950	353	117	33	51
Rodosto	2,950	116	40	34	40
Gallipoli	3,530	139	61	44	40
Philippopoli	8,780	525	208	40	60
Sliven (Islimnia) ...	3,950	173	81	47	44
ADRIANOPLE... ...	26,160	1,306	507	39	50
Saloniki	5,530	167	70	42	30
Seres	4,800	220	86	39	46
Drama	2,620	112	94	84	43
SALONIKI	12,950	499	250	50	39
Yanina	3,070	165	18	11	54
Agrykastro	6,870	163	75	46	24
Berat	1,620	141	109	78	87
Trikala	5,740	173	23	13	30
Preveza	1,020	69	26	38	67
YANINA	18,320	711	251	35	39


TURKEY
IN EUROPE.
(DENSITY OF POPULATION)
Towns over 10,000 inhabit.
less than 30 inh. to a Sq M.
30 39
40 49
50 59
60 69
70 79
80 89
90 99
100 and over
HUNGARY
RUMANIA
SERVIA
BULGARIA
BOSNIA
HERZEGOVINA
CROATIA
DALMATIA
MONTENEGRO
EPIRUS
THESSALY
GREECE
BLACK SEA
Galatz
Braila
Bucharest
Rustchuk
Varna
Sofia
Philippopli
Arianopli
Constantinople
Saloniki
Monastir
Uskub
Sarajevo
Mostar
Banyaluka
Yanina
Scutari
Durazzo
Brusa
Berghama
Edremid
Gallipoli
Dedeagatch
Rodosto
Demetoka
Kirkkilisse
Sliven
Kezanlik
Shumla
Silistria
Tultcha
Babadagh
Ismail
Jurjewo
Giurgevo
Plevna
Vratza
Pirot
Nissa
Prishtina
Ipek
Prizrend
Ochrida
Prilip
Veles
Seres
Drama
Kavalla
Thasos
Mt Athos
Veria
Florina
Vodena
Berat
Avlona
Tirana
Skodra
Dulcigno
Cattaro
Ragusa
Trebinye
Novipazar
Leskovatz
Krushevatz
Travnik
Banyaluka
Sissek
Kragujevatz
Semlin
Belgrad
Orsova
Petroschen
Craiova
Ibraila
Focshani
Ploesti
Turnovo
Levetz
Tirnova
Eski Sagra
Chirpan
Pazardjik
Kustendil
Shtiplie
Krushevo
Divra
Tirnovo
Ibraila
Tultcha
Babadagh
Ismail
Galatz
Rustchuk
Silistria
Varna
Shumla
Sliven
Kezanlik
Philippopli
Arianopli
Kirkkilisse
Demetoka
Rodosto
Constantinople
Brusa
Gallipoli
Edremid
Berghama
Dedeagatch
Seres
Drama
Kavalla
Thasos
Saloniki
Veria
Florina
Vodena
Monastir
Uskub
Ochrida
Prilip
Berat
Avlona
Durazzo
Tirana
Skodra
Dulcigno
Cattaro
Ragusa
Trebinye
Mostar
Sarajevo
Yanina
Argyrokastro
Preveza
Corfu
Tricala
Larissa
16°
18°
20°
22°
24°
26°
28°
30°
44°
42°
40°


TURKEY
IN EUROPE.
(NATIONALITIES)
According to Dr. H. Kiepert.
Turks (Osmanli and Tartars)
Greeks.
Albanians (Skipetars)
Rumanians.
Bulgarians.
Servians.
Russians.
Turks & Greeks.
Turks & Bulgarians.
Albanians & Greeks.
Albanians & Bulgarians.
HUNGARY
RUMANIA
SERVIA
BULGARIA
BOSNIA
CROATIA
DALMATIA
HERZEGOVINA
MONTENEGRO
EPIRUS
THESSALY
GREECE
BLACK SEA
Galatz
Bukarest
Rustchuk
Sofia
Philippopli
Arianople
Constantinople
Salonika
Varna
Plevna
Sarajevo
Belgrad
Brussa
16°
18°
20°
22°
24°
26°
28°
30°
44°
42°
40°

Vilayets and Sanjaks.	Area. Sq. m.	Population (in thousands). Total.	Muham.	Muhammadan. Per ct.	Inhabitants to a Sq. m.
Prisrend	2,230	387	281	73	174
Bitolia (Monastir) ...	7,120	379	126	34	53
Korytza	2,320	151	53	45	65
Divra	2,530	244	225	92	96
Skoplia	4,120	231	110	47	56
PRISREND	18,320	1,392	795	57	76
SHKODRA (Scutari)	5,310	171	82	48	32
Rus'chuk	5,990	567	331	59	95
Fulcha	5,080	220	136	62	43
Varna	3,400	122	89	73	36
Turnov	4,760	374	150	40	79
Sofia	5,510	353	53	15	64
Vidin	5,000	360	61	17	72
Nish	4,380	307	92	29	70
DANUBE (Tuna) ...	34,120	2,303	912	40	68
Serayevo	2,760	127	70	56	46
Svornik	2,280	228	107	47	100
Travnik	3,610	145	47	32	40
Novipazar	3,040	128	65	51	42
Banyaluka	2,910	152	32	21	52
Bihaty	3,300	160	80	50	50
BOSNIA *	17,900	940	401	42	52
Herzegovina * ...	5,720	144	59	41	25
Crete	3,326	210	38	18	63
Army and Navy ...	—	94	85	90	—
Foreigners	—	60	5	8	—
TOTAL	143,166	8,207	3,585	44	57
Servia	16,820	1,340	·5	—	80
Montenegro	1,710	125	—	—	73
Rumania	46,709	4,500	1	—	96
GRAND TOTAL...	208,405	14,172	3,586	25	68

E. G. RAVENSTEIN.

THE FISHERIES OF DENMARK, THE FÆRO ISLANDS AND ICELAND.

A FEW years ago, Admiral Irminger of the Danish Navy, wrote a most interesting account of the Fisheries of Denmark, Færo and Iceland, the substance of which we propose to furnish to our readers, supplemented by the latest statistics on the subject.

Denmark, in proportion to her area, possesses a very extensive coast-line washed by seas well stocked with fish; yet fishing is not so extensive a branch of industry as might be expected. This may be attributed to the great fertility of the soil, and to the inhabitants thus finding a sure and easy means of subsistence in agriculture; while those who are reduced to gaining a livelihood by fishing are exposed to hardships and dangers out of all proportion to the profits. Fishers often find some difficulty in the sale of their fish in a country where other food is abundant, and hence the inhabitants of the coast prefer to engage in long sea-voyages, in which the profits are more certain and more regular.

The system of subsidies which, in France for example, contributes so powerfully to the development of maritime fisheries, and thanks to which that republic secures so large a number of excellent sailors, is not adopted by the Danish Government. This is one reason why the fishing industry is not more developed in Denmark.

The kinds of fish that are taken in the Danish seas are the herring, cod, whiting, plaice, turbot, sole, mackerel, salmon and eel.

Among the localities where fishing is most extensively carried on is the north-east coast of Zealand, where there are many fishing villages, the inhabitants of which supply the Copenhagen market. But Skagen, the most northern point of Jutland, is considered the most important fishing village in Denmark. The neighbouring sea abounds in whiting, cod, turbot, and sole. Skagen and Frederikshavn, a port a little to the south, on the Kattegat, are regularly visited by more than thirty vessels, which go to and fro, taking cargoes of live fish for sale at Copenhagen and other sea-ports of the kingdom. Among the fishing villages that are plentifully scattered along the west coast of Jutland, from Skagen to the mouth of the Elbe, Nymindegab is that at which the fishery is most important. In one year 700,000 whiting and 25,000 cod were taken there.

The fishery of Lymfiord, a long arm of the sea extending from the Kattegat nearly to the North Sea, right across the north part of Jutland, is scarcely less considerable. On the shores of the Belts there are also many fishing villages where the work is usually very active. A single example will suffice to show the abundance of fish in the Belts. In the Odense Fiord, a bay of the Kattegat on the north coast of the Island of Fyen, such a quantity of excellent codfish are taken in nets, each weighing about 4 lbs., that, for want of a demand, they are sometimes used for manure, and are sold to the peasants at 20 or 30 pence the cart-load.

In the vicinity of the town of Middlefart, on the Island of Fyen, there has been, for some time, a fishery of porpoises *(Delphinus phocæna)* from the beginning of November to February, which is very profitable. At this season of the year the porpoises leave the Baltic in great numbers. The fishery is carried on by a corporation of thirty fishermen with ten vessels. In 1858, an exceptional year, they took 2200 porpoises, but the average take is about 1100, and it is calculated that the oil from each porpoise is worth from 7*s.* 6*d.* to 8*s.* 4*d.* The manner of taking the animals is almost the same as that employed for the *grindehval* at the Færo Islands, which will be described presently.

But it is during the herring season that the Danish fishermen are most busily employed, that is to say, when the fish, in their migrations, traverse the Danish seas in the spring on their way to the Baltic, and on their return in the autumn. It is not rare that a considerable quantity is then taken, the greater part of which is sold on the spot to the farmers. Many herrings are also smoked and sold at a good price, for consumption in the interior. It is on the north coast of Zealand, at Kiertemunde, at Karsoer, and in the Island of Bornholm, that the herring fishery is most extensively carried on. The fishery of Bornholm, a large island in the Baltic, supports 500 fishermen, who catch salmon, cod and herrings. They take much of their salmon to Swinemunde, on the coast of Pomerania,

* These data are from a British Consular Report published in 1873. According to Yakshity, Bosnia has 1,173,000, the Herzegovina 185,000 inhabitants, and amongst the former are 450,000, amongst the latter 43,000 Muhammadans.

and not unfrequently the fish are eaten in Paris and Vienna two days after being taken.

The whole number of fishermen in Denmark was calculated, some years ago, at about 6500, and the total value of the fisheries at £150,000.

The inhabitants of the Færo Islands number about 9000 souls, living almost entirely on the sea-shore. They are a fine people, intelligent, courageous, and inured to hardships. As their existence depends mainly on the products of the sea, nearly all the male population is engaged in fishing, but they also raise sheep in the interior, and cultivate the land to some small extent. Another industry of these islands is the birdcatching, which requires great courage and intelligence. The cliffs rise perpendicularly to a height of 1600 feet above the sea, and it is on these precipices that the sea-birds breed. It is astonishing to witness the intrepidity with which the islanders descend the sides of the cliffs, slung to ropes in order to reach their prey. The flesh of most of the birds is good to eat, and their feathers are an important article of commerce. An idea may be formed of the abundance of these sea-birds, when the ordinary take is 235,000 of puffins alone (*Fratercula Arctica*). About 20 of these birds yield 1 lb. of feathers.

In their fishery the islanders use small row-boats fitted for from four to eight men, which they manage with skill, putting far out to sea, where they catch plenty of codfish on the banks round the islands, sometimes at a distance of 20 to 24 geographical miles from the land. The fish form a considerable part of their daily food. The islanders also export a large quantity every year. The fish which are not intended to be exported immediately are salted, pressed and dried. These are called *Klip-fisk*. Fish simply dried in the air, and not salted, are called *Tor-fisk* or *Flat-fisk*. In 1875 there were 1,880,000 lbs. of *klip-fisk* and 204,000 lbs. of *tor-fisk* exported from the Færo Islands to Copenhagen. In 1874 it was 722,100 lbs. of *klip-fisk* and 131,200 lbs. of *tor-fisk*. To England, in 1874, 3,034,800 lbs. of *klip-fisk* and 128,500 of live or raw fish. The whole export of fish from the Færo Islands in 1874 was 3,756,900 lbs. of *klip-fisk*, 131,200 lbs. of *tor-fisk* and 128,500 lbs. of raw fish.

But the most profitable fishery of the Færo Islanders is that kind of large dolphin, called by them *grind-hval* (*Delphinus globiceps*),* and by the English "bottle nose." The Scotch, Dr. Brown tells us, call it the "*caaing whale*," *caa* signifying to drive, from the ordinary method of capture being by driving them on shore. The head of this cetacean is short, thick, and nearly globe-shaped. The body is long, of a black colour on the back and sides, with the belly marked by a white line. The *Delphinus globiceps* habitually comes to the Færo Islands during the spring and autumn, generally when it is misty and drizzling, which kind of weather the Færo Islanders called *grindemorke* or *grindeveir*. These cetaceans are distinguished from other kinds by a more tranquil and equal movement. They often come in schools of many hundreds.

This fishery is a veritable blessing to the islanders. Part of the blubber is salted for domestic use, but most of it is destined for the manufacture of oil. The flesh is eaten, either salted, well dried, or fresh. It is tougher than beef. The bladders are made into straps for the thole pins in the gunwales of boats, and many other parts of the animal are utilised. In their ordinary conversation the islanders call a single *Delphinus globiceps* a *hval* (whale), while a school of them is called *grind*.

When a boat of fishermen sights a *grind* on the open sea, a sailor's jacket is hoisted at the mast-head. At this signal all the other boats in sight hasten to assemble near the *grind* and range round it, to prevent its escape before a large number of boats has come up, in order that the chase may be conducted with the necessary certainty and energy. Sometimes the *grind* is very wild, which makes the chase difficult. It occasionally happens that the fishers pursue the *grind* for several days, surrounding it many times, and yet, notwithstanding all their patience and toil, they are obliged to abandon it. It occurs, not unfrequently, that the *grind* is first sighted, blowing in the offing, from the top of a cliff. If this is on a part of the coast where the boats cannot be seen, the news is sent to the nearest village, messengers carry it from village to village, and long before they arrive, their cries of "*Grindebo! grindebo!*" arouse the whole population. Every man capable of handling an oar runs to the boats, some armed with knives and harpoons. The knife is long, with a large steel blade, and is suspended to the waist-belt in a leathern sheath. The harpoon consists of a blade of two edges, about 3 inches wide and 12 to 14 long, with a handle 8 or 10 feet long, attached to a line in the boat. In a few moments the boats are ready to hurry to the chase. They are manned by ten oarsmen and a coxswain.

Admiral Irminger describes one of these *grind* hunts in which he himself took part. It was in 1844 that he found himself at the village of Midvaag, in the Island of Vaagoé. At five in the morning of the 29th of June he was aroused by the cries of "*Grindebo! grindebo!*" It was a perfect *grind* day, that is to say with a cloudy and misty sky. The *grind* had been seen at three in the morning by a fishing boat about 12 miles south of Vaagoé. An extraordinary commotion agitated the village. The boats were ready almost in a moment, and soon after they were out of sight. The village of Midvaag was selected, with reference to the direction of the wind, as the point at which the *drab* (killing), as the Færo Islanders call it, should take place. Midvaag is situated on a coast which rises gradually from the sea, and at the bottom of a bay in which, when the *grind* has been hunted, the boats can easily surround and harpoon them. Part of the population staid on shore, and assembled at a spot where they could have a clear view over the sea.

At first a drizzling mist obscured the view, but towards 9 A.M. the sky cleared, and there was no sign of the *grind*. The general opinion was that it would not be reached before noon. The tide did not turn before 11, and the chase ought not to be begun until the current is in its favour. Towards 11 A.M., to the great joy of the eager throng of spectators, three boats came in sight, and soon afterwards fourteen were counted, but it could not be made out whether they were actually chasing the *grind*. They appeared, however, to be ranged in a semicircle, and consequently occupied in the chase, and a moment afterwards a line of foam was discovered in front of the boats, which resembled the meeting of two tides. It was the *grind*.

* The *Globiocephalus Svineval* of Lacépède.

The rapidity of their movements, and the constant blowing of these cetaceans, caused the line of foam.

The boats had begun to assemble near the *grind* soon after dawn, and it was decided that Midvaag would be the most convenient place to make for. It was necessary to surround the *grind* while the tide was ebbing. With the turn of the tide the chase commenced. The boats were ranged in a semicircle, propelled by oars, and steered in accordance with the directions of the harpooneers. The animals, to avoid the boats, keep in front. As the water shallows, all possible precautions are taken to prevent their escape to the open sea.

Soon after noon the entire *grind*, followed by 71 boats, manned by 670 seamen, entered the Bay of Midvaag, which is surrounded by high mountains. First came the cetaceans, followed by the boats, and among them that which had hoisted the jacket as signal. Pursued and pursuers flew over the sea with the rapidity of an arrow, the sailors pulling at their oars as if their lives depended on the result.

Notwithstanding the fine weather the sea was violently agitated, not by the wind, but by the rapid movements of the terrified animals, and their blowing caused a deafening noise. The excitement was intense. As soon as the *grind* was about 400 yards from the bottom of the bay, the harpooners in the bows of the foremost boats began to lance their harpoons. Soon the foaming waters were reddened with blood. The slaughter soon became general, the harpoons flew about on all sides. Here a wounded animal sprang furiously into the air, the troubled waters crimson with its blood. There a whole troop rushed blindly against the boats. In two and a half hours after they entered the bay, 249 cetaceans were dead upon the beach, the largest being 20 feet long. A day or two after the hunt the dead bodies of some of the victims appear on the surface of the sea, being those that had been killed in deep water. These are called *driv-hvaler* or floating whales.

The slaughter over, the boats return and the men rest from their fatiguing work. Many have pulled 32 miles from the place where they received news of the discovery of the *grind*, showing not only the rapidity with which the news spread, but also the energy of these brave people. Five hours after noon the ebb commenced, and the carcases were left high and dry. Then the division was made according to established rules. The largest share belongs to the boat that hoisted the signal, and the head and the fattest part of the animal are the recompense of the man who first sighted the *grind*. The division finished, the boats return each to its own village, well laden with flesh and blubber. The flesh is cut into long strips, and hung up to dry; and having separated the blubber destined for domestic use, the rest is boiled. A barrel of oil is obtained from each animal.

In 1875 about 800 of the *grindhvals* were killed. From 1833 to 1862 the number killed was 37,986 in 248 slaughters. The largest number was in 1843, when 3143 were killed, the smallest in 1857 when the number was 323. The largest capture at one time was on the 27th of July, 1852, when 852 were killed in the Bay of Vaay at Bordoe, one of the most northern islands. The oil is sent almost entirely to Copenhagen.

The other cetacean met with off the Færo Islands is the *dogglinger* or *nabb-hval (Hyperoodon butzkop)*.

The Iceland fishery consists of cod and *hakal*, a sort of shark *(Somniosus microcephalus)*. It is chiefly carried on along the west coast, some of the boats being decked and others not. The shark fishery is chiefly off Budenstad, Isefiorp, and Ofiord. In 1862 Copenhagen sent 16 fishing vessels to Iceland, having a total of 1017 tons and 170 men. Iceland herself had 62 vessels with a total of 1210 tons and 440 men. Three barrels of the shark liver produce two barrels of oil.

In 1875 Iceland sent to Copenhagen 9600 barrels of shark-liver oil, 2,200,000 lbs. of *klip-fisk*, and 255,000 lbs. of *tor-fisk;* to Spain, 6,000,000 lbs. of *klip-fisk*, and to England, 800,000 lbs. of *klip-fisk*. The total export from Iceland was 9,000,000 lbs. of *klip-fisk* and 255,000 of *tor-fisk*.

WRANGELL LAND.

HERR L. VON HELMERSEN has published a useful little pamphlet, tending to clear the ground of discussion with respect to the land north-west of Behring's Straits, which is usually called Wrangell Land. He observes that Dr. Petermann proposed * to call it Andreyef or Kellett Land, on the ground that Wrangell had vehemently denied its existence. Herr C. E. Baer opposed Dr. Petermann's proposal—and apparently successfully—for the Doctor seems to have since accepted the appellation, Wrangell Land, as correct. In 1875, however, he changed his ground, and called it Kellett Land, making out that Wrangell Land could only be properly applied to a yet undiscovered coast west of Cape St. Thomas. Herr Von Helmersen takes the opportunity to bring forward two MSS. which were unknown to Baer, and which throw some light on the discussion. These MSS. will be published in the *Proceedings of the Imperial Russian Geographical Society*, and comprise two reports addressed by Colonel Plenisner, who was Commandant of Okhotsk between 1760 and 1772, to the Governor of Irkutsk. Plenisner had accompanied Behring in his expedition in 1741, and had furnished Pallas with much information concerning North-eastern Siberia. The discovery of these documents is due to M. A. S. Polonski, who has been for upwards of twenty years in Okhotsk, Yakutsk, and Irkutsk, being Member of Council in the last-named place. During this period he has accumulated a great mass of information respecting the history of the Russian dominion in N.E. Asia, and his highly interesting work, *On the Conquests and Discoveries of the Russians in N.E. Asia*, is at present in MS., in the possession of the Siberian section of the Imperial Geographical Society.

Plenisner's report to the Governor of Irkutsk, dated 6th October, 1771, states that a Cossack named Stepanof and a companion named Konovaloff had in the year 1756 descended the Kolyma and then journeyed to the Krestovaya, and from thence crossed over and visited five islands, one of which was visible from the mainland, and on one of which they found a sort of fortification erected. The existence of these islands had been made known to them by Sergei Paulof of Sachiversk, who in his turn had heard it from Ivan

* *Geogr. Mittheil.*, 1868, I.

Wilegin. They were very desirous of making a fresh exploration in that direction, particularly as Wilegin had spoken of having also visited an extensive land covered with forest. In 1763, Plenisner, wishing to put these alleged discoveries to the proof, journeyed as far as Anadyrsk, from whence he issued the necessary directions to a sergeant named Andreyef, whom, in the absence of a proper surveyor, he wished to conduct the exploration. Andreyef, accompanied by five others, left Nishni-Kolymsk on the 4th March, 1763, and in the following month explored the five islands, but appears not to have reached the extensive land referred to above. The next year, Plenisner ordered him to undertake a second trip, with the object of visiting the land in question. Andreyef started on the 16th March, 1764, and from the Krestovaya River proceeded to a sixth previously undiscovered island, which proved to be over 80 versts in length. He stated also that as he was proceeding thither he came upon the recent tracks of some unknown people, who had arrived that day from the island in reindeer sledges. The illness of one of the party unfortunately prevented further progress from being made. Andreyef submitted his journal as well as a report on this journey. As, however, no map could be submitted, owing to the absence of any surveyor, Plenisner applied to the Governor of Siberia for some properly qualified persons to carry out the end in view. Three surveyors were accordingly supplied to him, and these duly submitted a journal, a report, and a map illustrative of their labours.

The Governor of Anadrysk, Captain Peresypkin, in his remarks on the expedition, stated that a Cossack, named Nicolas Daurkin, had been informed by Chuktches (*Tuskis* of Hooper) of the existence of three islands opposite the Chuktche promontory, and of a larger tract of land on which a fort was situated. These islands were generally visited by the Chuktches on foot, in February and March; they were not wooded, but there was abundance of drift-wood upon them. The great land is remarkable for extensive forests, and a considerable quantity of fur-clad animals, which are hunted for the sake of their skins.

The report of the surveyors sets forth that during the month of March they explored the five Bear Islands, and that the latitude of the last island, which was a hilly one, 17 versts from the coast, 12 versts long, and 3 versts wide, was 71° 58′ N. These topographers had an opportunity of interrogating the Cossacks who had accompanied Andreyef in his trip in 1764, and these stated that after leaving the fifth island they proceeded northward along the ice, but were prevented by a broad lane of water from going far, and so returned to the second island, having been absent only three days. They further stated that Andreyef's statement about the existence of a sixth island of great extent, as well as about the discovery of people who had arrived there in sledges, was a pure invention. The three other members of Andreyef's party gave a like denial to his story.

It would appear from this that Andreyef's narrative was wholly untrustworthy, and that Herr Baer is right in the discredit he has always thrown on it. With regard to the proposal to call Wrangell Land after Sannikof, it should be remembered that Sannikof, who was Hedenstrom's fellow-traveller, never accompanied him as far eastward as Kolymsk, and that the land which he heard spoken of and believed to have seen, would have been somewhere north of New Siberia, Kotelnoy and Liakhof Islands, which were the only ones he visited. The land discovered by Captain Long, on the other hand, lies 25 degrees of longitude further east, and can have no possible connection with Sannikof's supposed discovery.

Turning our attention to the designations Plover Island and Kellett Land, it is to be observed that Captain Kellett, when in command of H.M.S 'Herald' (which with the 'Plover' frigate had been despatched to co-operate in the Franklin search), discovered on the 17th August, 1849, in latitude 71° 17′ 45″ and longitude 175° 24′ W., an island which he visited, and named Herald Island. North of this island in 72° N. latitude, and 175° W. longitude, he saw indications of land. To the south-west of Herald Island, in 70° 5′ N. latitude, and 176° 15′ W. longitude, he saw, about 25 miles off, another island or tract of land, which he named Plover Island. Between 70¾° and 71½° N. latitude, and 178° and 178½° W. longitude, he approached to within about 60 miles of an extensive, mountainous land, which he conjectured to be a continuation of the mountains seen by the Chuktches, according to Wrangell's account, from Cape Yakan. Seemann, who edited Kellett's narrative, says that the extent of this mountainous land was estimated at about 60 miles, and that they could not be sure whether Plover Island formed a part of it or not. These facts were first accepted as such by Dr. Petermann, but subsequently (1869, No. 1) he erased Plover Island from the map, quoting as his authority Heine's account of Rodger's expedition, which says that they sailed over the supposed site of the land seen from the 'Herald;' that the highest latitude attained was 72° 5′, and that Wrangell Island could not be found on the place assigned to it. From a letter of Rodgers to Count Muravief Amurski, however, we find that he says that "The vessel 'Vincennes' went 10 miles further than the point assigned by Admiral Wrangell to the land opposite Cape Yakan, but the fog was so thick that it could not be descried. Further progress was stopped by ice. Her Britannic Majesty's Ship 'Herald' has referred to the indications of land seen by it northward of Herald Island, but when we passed over the place indicated in the English charts we saw nothing but water." This account proceeds from Rodgers himself, and it will be observed is a very different affair from that given by Heine.

In recalling the chief incidents of Wrangell's journey, Helmersen arrives at the conclusion that he must have been about 15 miles from Cape St. Thomas, which was concealed by fog. He also quotes passages from Wrangell's work to show that Wrangell neither denied the possibility of land existing northward of Cape Yakan, nor of its being reached by sledging from the mainland in a favourable season.

He observes, in conclusion, that Wrangell having been thus the first to collect all the native information about the land in question, and that Sir Henry Kellett and Mr. Long having virtually agreed to abide by the name Wrangell Land, there is sufficient authority for the appellation being continued.

We entirely concur in this conclusion, and we take this opportunity of protesting against the habit of

changing names on insufficient grounds, as well as against the impropriety of meddling with the work of a practised scientific surveyor like Sir Henry Kellett, on the receipt of reports by American whaling captains.

SKETCHES OF LIFE IN DANISH GREENLAND.

III.—Our Winter Days at Godthaab.

The winter scenery, though grand and imposing, never enchanted me much; neither was I particularly fond of the long excursions we sometimes undertook, in large companies, from the colony. For, as we could never go far enough to see other scenery than the very same we had before us at home, I thought we were as well off there, except for the delightful motion when we walked over the hard-frozen snow levels. It quite excites me to fancy the cracking sounds under our feet! When the weather was alluring, but the walking bad, because of the great masses of new-fallen snow, we had to use the inevitable snow-shoes, which we did awkwardly enough, and which became an instrument against us, as we had often to expose ourselves to the criticism of our gentlemen, who had to restore our equilibrium oftener than they appreciated and, I may say, than we did ourselves, as their act of kindness never came off without a touch of mockery. On the whole, excepting our daily little walks, as, for instance, over the nearest hills to the Moravians, I preferred by far to stay at home and take my walk on the extensive colony road, called Langelinie, which, to tell the truth, had often to be dug out from beneath the snow-depths by the assiduous colony servants—in Greenland called the colonists. The colonists are engaged in the service of the Royal Board of Trade, and their number is fixed according to the size of the colonies—I believe, never more than about sixteen—natives, all of them. They perform all manner of work appertaining to the maintenance of the colony and the wants of the Europeans, and are under the control of the Governor: baking our bread, brewing our beer, making smooth our paths with their snow-shovel, and, besides, acting as smiths, carpenters, boat-builders, and, in summer, serving as sailors in the many excursions undertaken for government service. I always liked the colonists, though I never thought them able to touch the romantic strain of my soul, but—"fond memory brings the light of other days around me"—I cannot help clinging fondly to the past.

I call to mind a certain afternoon in February, in the season of the long days for evening promenades. The weather is lovely, so we—the doctor's wife and I—had agreed upon going out together after dinner; I was to call for her. In the snug little room the tea-kettle was boiling on the stove, at which the doctor, stretching himself pasha-like on his sofa, had a good laugh, which he regularly had whenever tea in the afternoon was spoken of, pretending he had never heard anything like that except in a madhouse, where he had once practised in his medical capacity. But it was not long before he excelled us in our liking for this meal. We quickly put on our cloaks, the doctor's wife a coarse European waterproof, I a sealskin jacket lined with reindeer, both European bonnets, boas and muffs; and leaving the doctor to his meditations, we went out, pacing up and down the high, sheltering snow-walls of Langelinie, as well as in other places where the view was as unlimited as in summer, though of a very different aspect. All is white! The "Nowk," the "Kangek," the "Northland," the "Cook Islands," all, excepting the dark blue sea, in which the white headlands are running out like so many snowy arms. We conversed as usual, touching upon several topics; indeed Langelinie has heard many a secret of the Danes, as well as of the Greenlanders. There I have, with my husband, proposed and arranged many a matter of importance—I may say even our future life; and at times, especially when we were much taken up by our private arrangements, we particularly enjoyed those rendezvous at the colony road.

To-day Mrs. S. and I have an unexpected interruption from seaward. There is a stir occasioned by the appearance of a boat round a cape. A boat in winter is not nearly so interesting an occurrence as in summer, as you are aware beforehand of what it brings you. Boats can only arrive in winter from within one's own district. This one was from Kornuk. There we had a sort of storehouse; and the under-official there, who happened to be a Dane, buys all venison which he can get from the Greenlanders, hares and ptarmigans, and sends them to us when he has enough to fill a boat with—or occasionally with a colony-visiting kayaker. Soon the "*assimiormiut*" (the strangers) had unloaded; in a little while they came to us and asked whether they might take the things to our kitchen. "Yes, please, the cook will be there." "No," says a little girl, who has overheard us; "Elisaus is in the stable milking the goats; I just left him there." The little girl is his daughter Arnak, the intimate friend of our own little daughter. "Well, then, we must go with you ourselves," and so we led them to our kitchen, where we dropped the icy birds in heaps on the floor, to be attended to by the unsuspecting cook. The men, who were not better dressed than Neapolitans in summer-time, now had a morsel of bread and a glass of brandy, and were then discharged. On opening the house door, in order to regain my friend, I stopped an instant to look after our colony bachelor, who, provided with a long stick and his evening lantern, was crossing over the level behind our little sick-house (too small to be called an hospital), on an evening visit to his congregation behind the mountains, our neighbours the Moravians. He himself belonged to their church, but he did not live with them, as he had an office at the colony college, being an excellent schoolmaster, and thoroughly familiar with the language of the natives. After descending the lower staircase I again had another detention in seeing the recently missing Elisaus coming round the corner from our stable, pail in hand. "*Immuk ikika?*" (I suppose you have not got much milk?) "No, indeed, not," he answered, "*Mitliartu inalerpuk*" (It is getting less every day); which I might have guessed without commentings, from the searching looks he sent to the bottom of the pail whilst saying so. At this time of the year we could not expect to derive much benefit from our dear goats, as the cold was too severe, and their food sometimes bad and sometimes even insufficient.

On the banks behind the doctor's house all the

children bustled about, noisily crying out in a way that reminded us of the welcome shouts of "*Umiarsuit*" in summer, but the pleasant noise was owing to a very different cause, such as involuntary tumbles and overthrowings in the deep snow, or collisions and confusion on the slides. Our children were always among the party, as on the whole they always partook in all the gatherings of the Greenlanders in summer as well as in winter. One of their favourite resorts was down among the European houses in the lower part of the place, where they gathered close to the house-walls for shelter, in the next moment to scatter about to the four winds, in "hide and seek," and other games.

When we first set out on our walk it was still broad clear day, although the moon and the dear evening star to the left of "Mount Malena" were already visible. But while we were pacing up and down, more stars came twinkling out through the dusk; and gradually the little earthly lights also began to glimmer one after another through the windows of the colonists' houses, situated on the sloping banks on each side of the road. Indoors the Greenland domestic life is going on pleasantly, at least to my fancy, and I will try to tell how. On the spacious room-like ledge the housewife sits nursing her baby, whilst lots of little half-undressed urchins bustle about behind her on the soft reindeer-skin which covers the ledge. The room at this time is nice and warm. On the same sitting-place two young girls are seen bending forward over their needlework, probably some skin-embroidery. Still in the same place, that goes along the whole length of the house, an old woman, probably a near relative, is enjoying a rest in the dusk, behind the others, with her bare legs crossed *à la Turque*. The ledge is kept as clean as possible, and all those who ascend it without taking off their boots must sit in a way so as to keep their feet outside the edge, like our two sewing-girls. On a box a little girl is playing with egg-shells, which she draws on a string, varying them with coloured beads, and these garlands afterwards serve to adorn the room, hanging down, among other trifles, from a nail in the wall, and I think are as nice an adornment as many of European invention. Marianne, a pretty young woman, who was only married last Sunday, is already, with an air of much importance, mending her husband's garments, and carrying her head rather higher at the consciousness of the blue ribbon she now wears round her hair-knot. The unmarried have red ribbon, and the widows wear the mourning colours, white and black. I must not forget Michael, a long-legged youth of sixteen, who is sitting close to the lamp, turning over the leaves of a psalm-book, for what purpose I don't exactly know, maybe in search of a certain book-mark, perhaps one he has drawn himself, and made a present of to some young maiden. A young woman's psalm-book is half-filled with such souvenirs, consisting either of drawings on slips of paper, with fragments from their lovers or friends, bits of ribbons or coloured paper. Such a psalm-book, with its profusion of markers, I remember as belonging to the most cherished of my childish recollections, and as being considered by me only second to the "king's" treasures. However, we will leave Michael in possession of his now not envied treasure book, and turn to his father and uncle, two elderly colonists. They have by this time returned from their day's toil, and are sitting on their little wooden boxes beneath the window-sill, which are their personal property, with tired and rather listless looks, and as usual leaning on their elbows. An older girl is tripping about the room in honour of the newly-returned masters of the house, who are going to have some supper. The brothers lived in one house, in one room, with their wives and lots of children.

To return to our promenade. We never got tired and never lacked entertainment; we also had several *rencontres* with our countrymen, who one after another emerged from their houses to breathe the air. "Well, now, it really is time to go home," my friend at length said, "but I shall see you straight up to your house!" "Ah, we can take another turn yet!" and off we go once more towards the cold blue sea; but this is the very last time, for now I can see my husband lighting his lamp, and our Elisaus closing the shutters. Magida we had picked up on the way, returning from her playground. Near our house the never-tiring *neviarsiat* (young girls) came sauntering down in their favourite way, with an arm round each other's neck, psalm-book in hand. They would remain walking, they said, till evening prayers, which were soon to be. We all know each other so well, and are in a great measure bound together by mutual interest; that is what makes the colony life so pleasant. I used to like the patriarchal style about it so much. Yes, everybody is an acquaintance! We knew the girls we met, all the playing, noisy children, the men and the women taking air in front of their houses (and the old Turkish ladies inside), each weather-beaten fisherman and seal-hunter that with tired steps ascends from the beach—we even know the two young men *Mads* and *Willy* (Marianne's young husband) who are coming down the hills on the left, with game attached to the muzzles of their rifles. The lately shot snow-white, smooth-feathered ptarmigans look so much nicer than the dirty, ragged, frozen creatures we had sent to us from Kornuk to-day.

"Good-bye, dears! Good-bye, Mrs. S.!" Inside it was snug enough, but outside was too tempting to-night! So having made the room still snugger by lighting the lamp, drawing the curtains, and trimming the fire, and having seen the child settled with her playthings, I could not resist going out on the steps once more to drink a few draughts of the splendid night-air. I should fail in describing with what emotions I regarded the scenery, and I shall probably also fail in giving a sketch of the visible outlines, but I can't help trying. The moon stood high in the heavens, brightly illumining the soft snow-hills of the two "Malenas," and the large level that appeared to be one endless sparkling sea of diamonds dazzling to the sight! A row of fantastic shadowlands to the left increased the effect still more; the hard-frozen stream, whose rippling sounds in summer are music to our ears, now lies buried in the snow below my feet, and on a bank just opposite I see a light in the catechist's Greenlandish house. Suddenly the silence is broken; I hear voices and the pattering of footsteps on the snow, and people come running down the banks whereon the little houses stand. They all gather for the same purpose, viz., evening prayers, that is always in winter held in the school-room. The dear little school! How invitingly the rays of the lights within

were sparkling out on the snow! But I did not follow the crowd that night; our doorsteps, with the starry moonlit arch above, was my church. I never could leave off gazing, quite losing myself in the inexpressible beauty of the mysterious worlds, around and above; but at length I was interrupted by the catechist, who came walking down to the school. "*Nalagialerpise?*" (Are you going to prayers?) I cried to him "*Sorugna!*" (Yes!) He answered, adding, "*Kakkak kaumassuak!*" (What a splendid moon!) The psalm-singing reached my ears when I opened the house-door to enter.

Later in the evening, when we escorted the clergyman's family, who had been visiting us, to the door, I found the night had changed; the moon was veiled, the stars less glittering, and a little wind had risen, and over the dark sea the phantom-like, though greatly admired, rays of the "aurora borealis" were shooting in their unsteady manner. I call them haunting ghosts; I don't like them; they made me feel rueful, sorrowful, and sad.

S. N. R.

A PEEP INTO KOKAN; OR, FROM DJIZAK TO TASHKENT, VIÂ KHODJENT.

Part I.—A Tramp over the Hills at Samarkand.

One morning in the year 1873, we set out on a trip from Samarkand to Tchepan-Ata. Our first plunge is into a network of gardens, fenced in by high, blank walls of dried mud, between which there is barely room for the deep, sandy fosse which is here dignified into a road, and overflowed by an intrusive stream every twenty yards or so.

But, little by little, the gardens melt away, and now the work begins in earnest. Seven-hilled Rome itself was not more uneven than Samarkand, and it is a sight to see how the last houses of the city surge up and down—now overhead, now underfoot—each peering out of its little bouquet of foliage, like a Russian in a fur great coat. And high, over all, running up hill and down dale, like the Great Wall of China in miniature, rises the vast, gray, crumbling rampart of the city.

Up and down, up and down—now breasting a steep ridge which piles itself up overhead like a wall, now sliding down a slippery incline with the gravel flying about us like hail, now shut into a deep, narrow gorge, cleft by some torrent which the merciless heat of summer has drunk up long ago. Warm work we have of it, scaling walls, leaping ditches, scrambling up banks, tearing through bushes, for this is a regular "cross-country" march, which, in most parts of Central Asia, is infinitely preferable to keeping the road.

To the road, however, we come at length; and striking along it, cross, one by one, the ridges which rise like stairs one beyond the other, culminating at last in the great bluff of Tchepan-Ata, from the crown of which the ground falls steeply away down to the great waste of bare gravel through which runs what is left of the Zarafshan. Going upstairs under a vertical sun is always rather violent exercise, as those who have scaled the Great Pyramid will readily admit; but when the stairs are several hundred feet in height, and extended over a space of 7 or 8 miles, the task becomes athletic enough to satisfy any amateur.

We have just reached the brow of a projecting bluff more than half way to our final point; and the whole Samarkand Valley lies outspread below us like a map. Glancing over it, I almost imagine myself once more on the ridge of Mount Salahiyeh, looking down upon Damascus. The same wide sea of dark-green, glossy vegetation, through which the white houses surge up like wreaths of spray; the same tiny river sparkling through its embowering leaves; the same great central mass of towers, and domes, and walls, and narrow, dusty streets, and low mud-houses; the same great bastions of naked rock standing up along the horizon, sharp and clear in the blistering sunshine as if barely a mile away; the same rich, voluptuous summer sky.

But already the strange contrast characteristic of Central Asia, where one stride carries you from riotous luxuriance to utter barrenness, begins to make itself apparent. Wherever water runs, wood grows; but one inch beyond the reach of the life-giving stream, the desert claims its own again. Below, the great masses of foliage extend, tree-top beyond tree-top, as far as the eye can reach; above are slopes of crumbling sand, and bare sheets of gravel, and parched ridges of dry, white clay, gaping thirstily through countless cracks toward the bright, scorching, merciless sky.

And the steps by which this ruin has been wrought are manifest enough. When the old Tatar conquerors, with that impulse of wasteful destructiveness which stamped them one and all, destroyed the forests which sheltered the land, and let in the unsparing heat from above, they bequeathed a legacy of misery to future ages. The exposed rivers shrank beneath the fierce sun—the earth grew parched and moistureless; water-courses had to be cut, fertilising it artificially, but exhausting yet farther the fast-failing rivers—and so the two evils went on acting and reacting upon each other, till now, within easy walk of "the Earthly Paradise," lies a desolation as of Arabia Petræa or the Kizil-Koum Desert. From the point where we stand we can see, through a cleft in the hills, a vast, lifeless, gravelly plain, the very symbol of dreary barrenness—amid which one narrow streak of shining water still lingers to mark the channel through which once rushed, in all its fulness, the "gold-giving" Zarafshan.

But at this point our reflections are broken by human voices and laughter, strange enough to hear on this bare hillside, with not a soul in sight. Is this a batch of gnomes come up from their underground workshop for a breath of fresh air? Something very like it, certainly; for as we crown a high bank, and dip down into the little gully beyond, we come suddenly upon a gang of native workmen, engaged in road-making. The "road," so far as it has yet gone, is broad and level enough; for the Russian conquerors have learned long ago, that pick and shovel are surer weapons than breechloader and mitrailleuse; but the work does not appear to be progressing very rapidly. And no wonder; for the skinny frames and sausage-like arms of the workmen differ as widely from the mighty bone and brawn of the home-bred navvy, as these brittle wooden spades, and picks scantily tipped with iron,

differ from the trenchant tools of Old England. Still, the group has a picturesqueness of its own. Naked to the waist under the blistering glare, with the cordage of sinews standing out over their gaunt frames, in yellow or white drawers and huge many-coloured turbans, they remind us irresistibly of half-plucked parrots; and the shrill scream of laughter which issues from them, as we come up, completes the resemblance. A little shrivelled fellow, with a face of monkey-like drollery, has just flung at one of his mates some morsel of piquant Bokharian chaff, and the "cheers and laughter" are universal.

And so we tramp on, ever higher and higher, somewhat inspirited by the fresh breeze that sweeps over the uplands, a delicious contrast to the hot, dreamy, lifeless heaviness below. But the intrusion of our English "training-pace" amid this universal stagnation has an incongruity about it which, at last, strikes even ourselves. By the silence and loneliness around us, we might be in the heart of a desert rather than within sight of one of the great cities of Asia; and the few living things that present themselves are all under the same spell. The solitary donkey-driver, stirring up clouds of dust with his trailing robes as he trudges behind his laden beast, drags one foot after the other like a machine. The grazing camels, startled by our approach, slouch lazily a step or two away, and then begin feeding again. Even to us, seasoned as we are, the little round tower that crowns the last hill-top begins to seem a long way off.

But at last we struggle up to the little tower, which, with its massive wall and low dark entrance, looks unpleasantly like a tomb; while, to complete the resemblance, there sit crouching in its very mouth two goblin creatures, whose skeleton forms, and long white robes, and blinking eyes, might well represent the newly-risen dead. However, having recovered from their first amazement at the unaccountable lunacy which drives men to walk up steep places in the heat of noon, when they might just as well sit still, the two troglodytes receive us civilly enough, and answer our request for water by producing an earthern bowl of very doubtful cleanliness, nearly half full. We look dubiously at it for a moment, with a haunting recollection of the countless deaths from "thread-worm" caused every year by the Bokharian water; but after an eight-mile tramp with the thermometer anywhere you like above 120, one grows callous to these little scruples, and the vessel is soon drained dry.

And now, having taken breath a little, we can begin to look about us, for this is a place worth looking at. Downward from these hill-tops, on a fine June morning in 1868, broke the last army of Bokhara in one great whirl of ruin, and the sceptre of Timour passed from the hands of the Amir into those of a Russian Governor-General. As we stand here, the whole scene lives before us again. There they go, the surging thousands, dimly seen through clouds of smoke and dust, in the hot stifling reek of the gunpowder—a nightmare of hurrying faces—some livid with terror, some black with rage, some haggard with fatigue and hunger; weapons wildly flung away, garments torn and bloody, men reeling and falling on every side, cries of despair from a thousand tongues drowned by the deep hoarse "hurrah" of the charging Russians, whose bayonets come glittering over the brow of the hill like the spray of a breaking wave.

PART II.—ALEXANDER THE GREAT'S "FARTHEST EAST."

It was a fine September morning (considerably hotter than a July noon in England) when I left Samarkand for Djizak, on my way to Khodjent. The general aspect of the country as far as Djizak, the rise of the ground through successive terraces, into the great wall of Tchepan-Ata, the wide wilderness of gravel beyond, through which the countless streams of the diminished Zarafshan force their way with difficulty, the succeeding belt of rice-fields, followed by matted undergrowth, all ending at length in bare, rugged hills, I have fully described elsewhere.* Suffice it to say that, just as the sun began to sink, the black mouth of the famous pass, which the natives poetically call the Gate of Tamerlane, yawned before us (the huge black cliffs on either side looking vaster and grimmer than ever, under the fast-falling shadows of night), and behind it lay the massive gray walls and narrow rubbish-blocked streets of Djizak, which, taken by the Russians in October 1866 (shortly after the decisive overthrow of the Bokhariotes at Irdjar), still remains as Asiatic, *i.e.*, as picturesque, dirty, and useless as ever.

At the time of my visit (September 1873), the highway intended to connect Khodjent with the Tashkent-Samarcand post-road had only progressed as far as Oura-Toubeh, about a fourth of the entire distance; and consequently the intervening steppes had to be crossed in an *arba*, or native cart, a sort of huge wheeled tray covered with a tilt, which, though certainly one of the most uncomfortable vehicles in the world, is as completely made for Turkistan as the mule for the Andes or the camel for the desert. Its immense breadth of beam, as well as its gigantic wheels, upwards of seven feet in diameter, make its upsetting all but impossible—no mean advantage in this region of holes, declivities, and torrents; while the way in which it scrambles, almost without a halt, through oceans of thick black mud, or masses of gravel and broken stone, is simply astounding. The driver usually mounts the wheeler (keeping his feet pressed against the shaft to prevent the horse rearing), and stimulates his team with a constant succession of fearful howls, besides which an Indian war-whoop would be "nowhere."

My Tatar henchman, despatched into the town in quest of a waggoner, speedily returns, accompanied by a figure which, if seen anywhere in England, would attract a greater crowd than any travelling circus. Nearly six feet high, but gaunt and wiry as a greyhound, legs bare to the knee, on which the toughened sinews stand out like cords under the brown leathery skin, a tattered blue robe, half shirt and half pinafore, dirty and greasy as a door-mat, a huge sheepskin beehive on his head, from beneath which peers wolfishly a long, narrow, swarthy face, with the straight, coarse, black hair, and deep-set, cunning, rat-like eye, which one sees likewise on the opposite side of the globe, among the marauding Indians of the Pampas.

This estimable charioteer agrees to carry us and our belongings across the steppe to Oura-Toubeh in two days, for the sum of eight roubles (about twenty-four shillings); and accordingly, just as we are rising next morning from our shawls on the stone floor of

* See *On the Road to Khiva*, chapter xxvii.

the post-house,* the huge framework comes creaking and groaning up to the door, and, stowing in hastily our biscuit-chests, hatchets, ropes and haversacks, away we go!

For the first day it is all level steppe, covered for the most part with short grass, but displaying wide patches of bare, sun-parched clay every here and there. Far to the right, the distant mountains rise against the sky in one great wave of purple shadow; but around us is neither shadow nor shelter—all is one scorching, blinding glare, as if the very sky itself were on fire. Though they go only at a foot-pace, the horses are sorely spent before the day is half over; and only twice in the whole of the long, weary, parching journey do we come upon a little hole in the turf, invisible at a few yards' distance, out of which one may scoop a cupful of brown turbid water, almost too foul to swallow. Lonely as I have found the Kara-Koum Desert and the "Hungry Steppe," this is a drearier region than all; and the only sign of life in it from first to last is a distant string of *arbas*, "carrying tobacco," as my Tatar tells me, "to the Fair of Djizak."

What a time of it Shah Rokh Khan and his forty thousand must have had of it here in 1861, dragging their thirty heavy guns over this great plain in the full glare of summer! Undoubtedly, though fine feathers may make fine birds, fine clothes do not make fine soldiers; and so the two last Amirs of Bokhara have found to their cost, ever since the reorganisation of the army by Abdul Samut Khan in 1831. Let us hear Kornil Suvoroff (the Cossack prisoner, from whose graphic narrative I learned more of Bokhara and Kokan than from fifty books) on the character of the men with whom he served so long:—

"The infantry numbered 2500 men—chiefly Russian and Persian prisoners, with a few Uzbegs. Their uniform was a red jacket and white trousers, with a high black cap made of sheepskin; and each man was armed with a musket and bayonet, a sabre and two pistols. They were drilled and disciplined after the English fashion, under the direction of Abdul Samut Khan (who had been for a time with the English army in India before he joined the Amir), their pay being three roubles (nine shillings) a month. Besides these, there were other soldiers levied from among the Sarts (lower-class Bokhariotes), but they showed little bravery, and often ran away at the first shot.

"The cavalry formed the bulk of the army, and there were not fewer than 13,000 of them quartered in the city of Bokhara alone. These were armed with sabre, lance, and rifle; and their pay, in the time of war, was two or three Bokhariote *tillahs* (from eight to eleven roubles) a month, with a remount when necessary. In time of peace they received no pay, but lived at home like the rest.

"As for the artillery (of which Abdul Samut took special care), there were about eighty pieces which had been cast in the country, besides those taken from the Kokanese. There were a few mortars among them, but the most part were 12-lb. guns; and of these more than fifty were kept in and around the Amir's palace itself. The artillerymen received the same pay as the foot, and wore much the same dress, only they had black jackets instead of red. In my time there was a foundry at Karshi,* and a powder-mill as well, under the charge of a Sikh deserter called Nassir Khan. The Amir seemed to think a great deal of his guns, but in reality they were very badly served, and if the ball went anywhere *near* the mark it was counted a good shot.

"Besides all these there was another cavalry corps, armed with great heavy pieces called *djezanlis*, which were carried either in carts or on the backs of camels. When they were to be fired, the men set them down and lay down full length behind them, and so let fly; but although they made noise enough, they seemed to me to be of very little use, except that they sometimes killed the men who fired them."

Late that evening we reached the "half-way house" to Oura-Toubeh, a little mud-village bearing the euphonious name of Djam, supped upon the inevitable water-melon and a few of those wonderful *sookhari* (large rusks) which never seem to grow stale, and upon which I have lived for weeks, without feeling the want of any other nourishment; slept as best we might among the corners of boxes and the helves of hatchets, and started again early the next morning.

The next day's work is a shorter one, but considerably harder; for the flat, monotonous steppe now changes to a "rolling prairie," the ups and downs of which develope the waggon's hereditary love of jolting to an extent which makes our still unhealed hurts smart intolerably; and even my patient Tatar looks as if he thought, for once, that the Prophet might as well have made out his *kismet* for a different destination. The shadowy mountain-wall on the right still haunts us as before; but instead of running parallel with our track, it is now plainly converging upon it, growing higher and bolder as we advance, and with one or two of the more distant summits covered with perpetual snow—one of the buttresses of the great partition-wall of the Tien-Shan.

About three in the afternoon we reached Oura-Toubeh, a straggling mud-village dominated by a fort perched on a high conical rock in the middle of it. Those who have seen Edinburgh Castle or the Acropolis at Athens can form a pretty good idea of its general appearance, though I must confess that the comparison which suggested itself to *me* (possibly in consequence of my being very thirsty) was that of a Russian tea-urn with a number of cups and saucers round it!

During the invasion of Kokan in 1861 by the present Amir of Bokhara, Muzhaffaru-'d-Din, this fortress was the scene of a memorable example of Asiatic cowardice. The Kokanese garrison in the place was strong enough to hold its own against any ordinary force; and as the position of the fort secured it against the play of such artillery as the Bokhariotes possessed, and any attempt at an escalade would have been sheer insanity, there seemed to be no way of reducing it save by famine. The Amir, however, opened the proceedings with a deafening salvo; whereupon the heroes in the fort instantly surrendered, and were repaid, as they deserved, by being all butchered on the spot.

In truth, in reading the history of these internecine

* In this post-house (utterly bare of all other civilised appliances) I actually found a copy of Ivan Tourgenieff's shorter tales—a significant testimony to the popularity of the Russian Thackeray, who well merits all the honour that he has received.

* The Neksheb of Moore's *Lalla Rookh*.

wars, one hardly knows which to be most disgusted at —the cowardice or the cruelty of both sides in turn. Let us hear Kornil Suvoroff again:

"The last time we marched against Kokan, the Amir lay but three days before the town, and fired only one salvo of artillery; after which the Kokanese abandoned the place, and we took possession of it without any trouble.* After it was all over, some of the Bokhariotes, wandering about in search of plunder, heard a man shouting lustily from the bottom of a dry well; and when they pulled him up, he turned out to be one of their own soldiers, who had been so frightened at the noise of the cannon that he jumped down there to hide himself."

At Oura-Toubeh, the hills close upon us, filling the horizon on either side; but between them lies a comparatively level expanse of fertile soil, on which, as we pass, we espy more than one magnificent cornfield. The journey to Khodjent is soon accomplished, for we are now once more in the track of the government post, which, slow as it is (to the extent of occasionally keeping you waiting eighteen or twenty hours for horses), is a perfect express compared with the crawling, bumping, creaking *arba*. At eleven the same night, after a heavy drag through deep sand for the last few miles (for, with all their wonderful vegetation, the environs of Khodjent are almost as bad for locomotion as those of Cairo), we jolt through a huge shadowy gateway in a massive gray wall, and are in the ancient city at last—on the spot whence Alexander of Macedon, turning on his heel after a victorious march of five thousand miles, looked longingly at the blue mountains that marked the boundary of the land which he was never to enter. Here once stood the most remote of the Macedonian colonies—one of the countless "Alexandrias" with which that famous campaign dotted the boundless emptiness of the Turkoman steppes—where now a few fragments of defaced metal, wrangled over by conflicting antiquaries, are the only memorials of its existence.

Undoubtedly, so far as mere beauty goes, this charming little town (which a Persian poet might liken to a child cradled in roses), overlooking from its amphitheatre of green hills the swift, dark current of the Syr-Daria, with the glittering towers of seven mosques rising against the rich blue sky, above the many-coloured brightness of its thousand gardens, is indeed one of the gems of Central Asia; but its beauty is literally all that it at present possesses. Placed on one of the largest rivers in Turkistan, and at the intersection of the four great caravan-roads leading to Kokan, Balkh, Tashkent, and Samarkand, it has, nevertheless, no traffic worthy of mention. The silk factories established by the Russian colonists, though full of promise for the future, are still in their infancy, from the immense difficulty of obtaining skilled workmen. Moreover, the suddenness of the Russian occupation has given the conquerors and the conquered no time to coalesce; and the two races still inhabit separate quarters of the town, as at Tashkent.

In former days, however, the importance attaching to Khodjent was of a strategic rather than a commercial nature, as the key of the Khanate of Kokan on the western side, and a kind of outwork to protect the city of Kokan itself, which lies barely seventy miles to the east of it. In every advance of the armies of Bokhara upon their neighbour's capital, we find the fall of the latter heralded by that of Khodjent; for despite the importance of the position, its defence was utterly contemptible. Ivan Martchenkoff, a soldier of the 3rd Siberian Cossacks, who was serving in the Amir's Guard during one of these expeditions, thus describes the capture of the place:—

"When we got pretty close to the gates (though it was a terrible labour to drag our guns through the deep sand that lies all round the town), the Kokanese came rushing out upon us without any order or discipline, just like a mob. So then the chief of the artillery, Muhammad Hassan Beg, fired one salvo among them, and forthwith they all turned tail and fled back into the town, we following hard upon their heels; and so the place was taken. We found plenty of guns there (among them one made of bands of silver and iron turnabout), and the wall was stronger and higher than the wall of Tashkent, so that they might have defended it well enough if they had tried; but they weren't the men for that."

At this point, and for many miles up and down the stream, the banks of the Syr-Daria are higher and rockier than on its lower course, and fringed with a thick jungle of wild grass and huge reeds, such as one sees around Tchinaz and Fort Perovski. A regular plank-bridge laid on piles (the only one, so far as I am aware, on the whole length of the river) was in process of construction at the time of my visit. The river being navigable from this point, the scheme of establishing a regular communication between Khodjent and Tchinaz, in order to facilitate the transport of goods to Tashkent, has often been mooted, though not yet carried out. On the following morning we started for Tashkent.

DAVID KER.

* The seven "Englishmen" spoken of by my informant as serving in the Kokanese army on this occasion, were probably not men of English blood, but native deserters from the Anglo-Indian army, like Nassir Khan and others.

THE GEOGRAPHICAL CONFERENCE AT BRUSSELS.

THE Conference suggested by the King of the Belgians, in order to devise means for the further exploration and the civilisation of Africa, took place at the Royal Palace at Brussels, on the 12th of September. The meeting was attended numerously. The Royal Geographical Society was represented by Sir Rutherford Alcock, Sir Bartle Frere, and Sir H. Rawlinson. Admiral de la Roncière, Baron Richthofen, M. Semenof, Dr. von Hochstetter, and Commander Negri represented the Geographical Societies of Paris, Berlin, St. Petersburg, Vienna, and Rome. African travellers mustered strongly. Colonel Grant, Rohlfs, Schweinfurth, Nachtigal, Cameron, M. Duveyrier, the Marquis de Compiègne, and Lieutenant Lux attended. Sir Samuel Baker and Marno had been asked but were unable to attend. There were also present M. Maunoir, Sir T. F. Buxton, Admiral Sir Leopold Heath, Sir John Kennaway, Baron Hofmann, Count Zichy, and others.

In his opening address the King, in most felicitous language, pointed out the objects for which they had

met, and said that the neutral territory of Belgium appeared to him to offer peculiar facilities for initiating an international movement, such as they had in view. The travellers present gave a short account of their explorations, pointing out the countries they had visited upon a large diagram of Africa, forwarded for that purpose from London, after which a general discussion was opened. All present considered it important that "stations" should be established on the coast of Africa and in the interior, which would be available to explorers and others as bases to start from; but some of the members required, in addition, that roads should be opened right across Africa, along which regular caravans might travel with safety, and that steamers should be placed upon the great African lakes. Several of the members laid great stress upon the repression of the slave-trade, whilst others, less ambitious in their views, thought that the gradual opening of the country would finally lead to its extinction. Dr. Nachtigal said that we ought to confine ourselves to the roads already used by native merchants, and in this Sir Bartle Frere agreed with him. In the end, the question was referred for further discussion to two sections, the one including the English, French, and Italians, the other the Germans and the Russian. These sections discussed the matter separately in the afternoon, and on the following morning they were able to submit to the meeting definite resolutions. The field to be explored is to be bounded in the south by the Zambezi, in the north by the Nile and the independent countries of the Sudan, in the east and west by the coasts. The Egyptian territories are to be excluded, as Egypt was actively engaged there in promoting the work they had in view, and would not like to be interfered with. Stations are to be established on the coast, near Zanzibar, and at Loando, as well as in the interior, at Unyamuezi, Ujiji, Nyangwe, and the Muatayanvo's capital, but the question of opening roads, as well as of placing steamers on the lakes, is left for future consideration.

At a third meeting the organisation of this International Association formed the subject of discussion. There are to be "national committees," an "international committee," and an "executive committee." The president and two members of each Geographical Society joining the Association will be placed upon the "international committee," which will meet, as occasion requires, at Brussels. On the "executive committee" will be representatives of England, France, and Germany; and Sir Bartle Frere, M. Quatrefages, and Dr. Nachtigal were elected upon it. On the proposition of Sir Bartle Frere, the King accepted the office of President for one year.

A Swiss lady, Mrs. Heine, has already presented 20,000 francs to the newly established Society, and this, with the 100,000 francs subscribed by the King, is a handsome sum to begin operations with; but very large sums will be required, if the plans of the Association are to be realised. It need hardly be added that the hospitality of the King left nothing to be desired. The members of the Conference lodged at the palace, rode in the King's carriages, dined at his table, and attended his *soirées*.

Reviews.

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COMMODORE GOODENOUGH.*

"Men's evil manners live in brass; their virtues we write in water," are the words which Shakespeare puts into the mouth of the *honest chronicler*, Griffith. We, who live in a softer age, fall rather into the opposite extreme, and push the old maxim, *de mortuis nil nisi bonum*, too far. How often, in the multitudinous biographies of our time, is truth sacrificed to a mistaken regard for the feelings of relations and friends! In the present work this was impossible: rare, indeed, is it to find a life of such uninterrupted purity and excellence as that of James Graham Goodenough. His widow has solaced her loneliness in compiling this modest memoir of her husband, chiefly composed of extracts from his letters and journals. She has rightly considered that these, together with some letters from others, best unfold and illustrate his high character. It may be objected that the book is made too long by the addition of Commodore Goodenough's last journal in full. We are not of that opinion. The tragic end of his last commission gives an exceptional interest to all he did and wrote whilst in command of the 'Pearl.' The book is one which should be in the hands of all young naval officers.

Like his father, the Dean of Wells, and his grandfather, the Bishop of Carlisle, James G. Goodenough was educated at Westminster, and his old schoolfellows still remember him as one of those few boys of whom it can be said that their life at school was without reproach. One of these, Mr. Clements R. Markham, says of him that "He was, as a boy, what he continued to be as a man—honourable, true, tender-hearted, modest, brave, and a hater of all things evil. There was something in his society which raised others unconsciously. Yet he was not one of those boys who were never to be found out of bounds or in the fighting green. On the contrary, while joining heartily in all that other boys did, whether allowed or forbidden, he kept all real evil from himself and his companions by a sort of natural force. Every one liked him, and rejoiced at his successes in school and on the water, which were extraordinary for so young a boy."† In 1844 he entered the navy, and sailed for the Pacific in the 'Collingwood.' In this ship he had the advantage of being under very superior men, Admiral Sir George Seymour, Captain Smart, and Mr. Johnson, the naval instructor. He was actively employed for nineteen years with only an occasional interval of rest at home of a month or two at a time. His commission of lieutenant he obtained by competition; he was in the 'Raleigh' when she was wrecked near Macao, and after two short commands of gunboats, was appointed second-lieutenant of the 'Calcutta' during the Chinese war, and he was gazetted for his gallant conduct on four several occasions. On the day of the capture of Canton he was specially promoted to the rank of commander. In May 1863 he was posted; from

* *Journal of Commodore Goodenough, R.N., C.B., C.M.G., during his last command as Senior Officer on the Australian Station*, 1873-1875. Edited, with a Memoir, by his Widow. Henry S. King & Co., London, 1876.

† See *Commodore J. G. Goodenough*. A brief memoir, by Clements R. Markham, p. 6. C. B. Griffin & Co.

December in that year till April 1864 he was employed on a special mission to North America to obtain what information he could with regard to the ships and guns in use there. In November 1864 he was appointed to the command of the 'Victoria,' to bear the flag of his first captain, Sir Robert Smart, in the Mediterranean, and in 1867 to the five-masted ironclad the 'Minotaur.' In 1870 he acted as flag-captain to Sir Hastings Yelverton who was in command of the Channel squadron. It was during this cruise that the war between France and Prussia broke out, and in November Goodenough offered his services to assist in the distribution of the *Daily News* Peasant Relief Fund at Sedan. Of the value of his assistance the director of the undertaking thus wrote: "We were almost in despair at the task we had undertaken, and were in sore need of encouragement; there came, in answer to our appeal for volunteers, a man, the very sight of whom at once communicated new life to us. Here was a man, the very model of an Englishman, with unbounded energy, and combining extreme gentleness with an iron sense of duty; born to command, and with a genius for communicating the love of order and regularity which characterised him; a man before whom one could only feel inclined to bow down; here was this man come to place himself meekly under orders, and to go plodding day after day through snow and slush." Goodenough's letters from Bouillon and Sedan form not the least interesting portion of this interesting book. He was afterwards employed, in February 1871, in revictualling Paris after the siege, and in the September following was appointed naval attaché to the maritime courts of Europe, in which capacity he visited and reported on the naval dockyards and armaments of Russia, Austria, France, and Italy. From one of the French dockyards he brought back the following story, which we cannot resist quoting: "Orders having been received to announce the establishment of the republic, an admiral mustered the crew of his flag-ship on the quarter-deck, and informed them of the change in the government, and that the motto of France from henceforth would be 'Liberté, fraternité, egalité!' The men were dismissed, and were leaving the deck, when he suddenly recalled them, adding, 'Seulement, mes enfants, souvenez-vous d'une chose—c'est que la liberté n'embarque jamais!'" In April 1873 he received the offer of going to Australia as commodore in command of the 'Pearl,' and in June left England for the last time. One part of the instructions he received before leaving England was to proceed to Fiji, and there, in conjunction with Mr. Layard, H.M.'s Consul, to report on the state of the Fiji group and on the advisability of the annexation of those islands to the British crown. He therefore proceeded alone to Fiji, arriving there in November 1873, and spent five months in a complete examination of everything connected with the state of the islands, everywhere assembling the native chiefs and white planters, and patiently hearing both sides, so as to obtain all possible information. The result of this inquiry was the exhaustive and admirably arranged report which he and Mr. Layard made to the Government, and which was laid before Parliament. In Goodenough's opinion annexation was a positive duty.

The horror and distress which the news of the Commodore's death, from the wound inflicted by a native in Carlisle Bay, in Santa Cruz Island, caused at home must still be fresh in the minds of our readers; all will remember the courage, the self-control, the patience, and the Christian charity shown by the dying martyr, as he may justly be called. The whole sad but encouraging story is told in touching language by his widow. It was felt at the time that we had lost one of the ablest captains in our navy, one to whom we could look with confidence in the event of a war, and one who spread amongst all whom he commanded, and over all with whom he associated, the influence of a gallant officer and gentleman, and of a devout and consistent Christian.

It is highly to the credit of the Board of Admiralty that, quite irrespective of party, Goodenough was continuously employed from his first entrance into the navy till his death; the longest intervals of repose in his career being from May 1863, when he was posted, to December in that year, when he proceeded on his mission to the American dockyards, and between April 1864, when he returned from America, and November of the same year, when he was appointed to the 'Victoria.' We are not aware that he had any special interest to recommend him; but it is well known how he used such influence as his own services gave him for the help and advancement of deserving officers.

Goodenough was a strict disciplinarian, and he expected to find in others that sense of duty which influenced his whole life. An officer who served with him writes, "Goodenough was a man not thoroughly appreciated by those who did not know him intimately. His manner on duty could be as uncompromising as his actions, and it required a man to know him well to understand fully the stern truth with which he could reprove negligence or wilful default; but to those who had the privilege of serving with or under him, his manner, whilst never passing over a lapse of duty, was singularly loving and attractive. There are many officers now serving (1875) who date their best feelings for the honour and well-being of the service from the time when they first came under Goodenough's fostering care." He followed the example of the great captains of a former generation in the watchful care he took of the youngsters under him, and he did most valuable service in training the young officers under his charge, who will in their turn do good and true service to their country. Over himself he exercised a constant self-control, of which instances are related in his early childhood; this self-control, we are told, helped to mitigate the sufferings of the spasms caused by the tetanus of which he died. In practical knowledge of his profession he was unsurpassed, and he lost no opportunity of acquiring knowledge; he had been one of the most forward boys of his age at Westminster, and was so good a linguist that he spoke five languages fluently. So deep was his concern for the welfare of his sailors that, to enable him the more forcibly to encourage temperance, he renounced for himself the use of all intoxicating liquors, well aware and readily admitting that total abstinence was a less high standard than temperance, but looking upon the former as an extraordinary remedy for an extraordinary evil. He had deeply studied all questions affecting the welfare of the service, and his views were remarkably unprejudiced and enlightened; his opinions, we believe, had

great weight with the authorities. The depth and vitality of his religious principles may be gathered from this memoir, and were felt by all who knew him; their sincerity was acknowledged by all, though he did not escape some annoyance on their account.

Had Goodenough been born seventy years earlier, he had ranked with the greatest of our naval heroes—had his career not been cut short by the arrow of a barbarian, he would doubtless have attained to the highest honours, place, and influence which the naval profession can bestow. Living and dying as he lived and died, he has left behind him a name and an example for both officers and men to love and follow.

William Wickham.

EASTERN PERSIA.*

Persia is a land of special interest in many ways, and as the borderland between Europe and India deserves the careful study of the Englishman. It is surprising, therefore, that its geography and natural productions should have hitherto remained so imperfectly known. Many parts of its area are still unexplored by the modern traveller, and until the appearance of Mr. Blanford's memoir, there was no work of reference on its zoology. We, therefore, welcome the appearance of these volumes with great satisfaction.

We need not discuss in these pages the remoter causes that induced the English Government to undertake the better definition of the frontiers between Persia and her eastern neighbours. It is sufficient to say that, in 1870, after much discussion on the subject between the India and Foreign Offices, Sir Frederic Goldsmid was appointed arbitrator of the differences between Persia and Affghanistan as to disputed points of boundary, and that the opportunity was taken of settling the western frontier of the Khan of Kalát on the same occasion. How ably these arrangements were carried out will be readily understood by those who peruse the Introduction contributed by Sir Frederic Goldsmid to the first volume of the present work. Let us now turn to the more scientific portions of it.

In the first place, Major Oliver St. John gives us a general description of the physical geography of Persia, illustrated by hydrographical and orographical maps of the country, which will aid to render this somewhat difficult subject more readily intelligible. That our knowledge of Persian geography is by no means complete will be obvious when we read that the highest continuous range of mountains in Persia is yet unvisited. The chain of Kuh Dinar, in the province of Fars, which is visible from the sea near Bushahr, "presents an appearance both as to outline and extent not unlike the Bernese Alps, and hardly inferior in extent of snow-covered surface." As the snow-line in August is certainly not below 14,000 feet, Major St. John is inclined to estimate the average height of the Dinar peaks at from 17,000 to 18,000 feet above the sea. Here is a fine new field for our Alpine explorers, not so very far beyond the Caucasus, which they have already begun to visit. One of the most singular features in Persian geography is the salt swamp called *Kavír* or *Kafeh*. "The universal condition of the alluvial soil of the Persian plateau appears to be that wherever it is exposed to sufficient moisture, either by the overflow of rivers, surface-drainage from the hills, or want of sufficient slope to carry off desert rainfall, a saline efflorescence is produced, which, forming a thin whitish crust on the surface, retains the moisture beneath for a considerable time, and thus creates, in winter and spring, a treacherous and impassable bog."

The principal *Kavír* is what is generally shown in our maps as the "Great Salt Desert" of Central Persia. Dr. Bühse, a Russian traveller, the only European who has seen it, crossed it about lat. 34°, when travelling from Damghan to Yazd, and describes it as about 6 miles wide. Its altitude cannot be fixed with any certainty. "It *may be* below the sea-level, and is certainly not far above it."

Following Major St. John's excellent essay, we have the same gentleman's narrative of his journey from Gwádar through Baluchistan and Southern Persia in 1872. We have next Major Lovett's account of his route along the Perso-Kalát frontier. Major Euan Smith, Sir Frederic Goldsmid's personal assistant and secretary, then gives us the history of his travels in company with his chief, first on the Perso-Baluch frontier mission of 1870-1, and secondly on the Perso-Affghan mission of 1871-2. The latter expedition involved the examination of the remote province of Sistan, seldom previously visited by Europeans. On this occasion the excessively bad conduct of the Persian Commissioner rendered the mission comparatively a failure. So far as settling the disputed question of the right to the province of Sistan is concerned, no conclusion was arrived at. But an excellent survey was prepared by Captain Lovett, and much evidence procured as to the present condition of this almost unknown territory. Sir F. Goldsmid's report upon this subject is given in the Appendix to the first volume.

The second volume of *Eastern Persia* is devoted entirely to Mr. Blanford's account of its zoology and geology, of which, as has been already stated, we had previously little more than fragmentary notices. Mr. Blanford's merits as a naturalist are too well known to render any reference to them necessary. We have only to say that the present volume is prepared in the same careful and conscientious manner as his former works. Complete memoirs on the mammals, birds, and reptiles of Persia are given, so far as these branches of its fauna are as yet known to us. Many beautifully executed plates illustrate the text. As regards its geology, it will be easily understood that our knowledge of this extensive country is far too imperfect for any general description of its geological formations to be attempted. All, therefore, that Mr. Blanford gives us, in the fifty pages devoted to this subject, is a brief summary of the principal geological features, so far as they have been ascertained by himself and other travellers. A somewhat more detailed

* *Eastern Persia; an Account of the Journeys of the Persian Boundary Commission*, 1870-71-72. Vol. I.—The Geography, with Narratives of Majors St. John, Lovett, and Euan Smith, and an Introduction by Major-General Sir Frederic John Goldsmid, C.B., K.C.S.I., British Commissioner and Arbitrator. Vol. II.—The Zoology and Geology, by W. T. Blanford, A.R.S.M., F.R.S. With numerous coloured illustrations. Published by the Authority of the Government of India. London (Macmillan and Co.), 1876.

account is added of his observations on the line of route which he followed when traversing Persia from south to north. We must not omit to add that Major St. John is likewise a hard-working naturalist, and that, having been resident in Persia, in superintendence of the telegraphs for several years, he has materially assisted Mr. Blanford in the compilation of the present volume.

THE BALEARIC ISLANDS, by *Charles Toll Bidwell, F.R.G.S.*, H.M. Consul. (Sampson Low, Marston & Co., 1876.)

WITH the exception of the beautiful illustrated work produced in Austria, there has been no book on the Balearic Islands since Georges Sand published her *Un Hiver à Majorque* in 1836. Yet these islands are extremely interesting in many respects, and their description formed a desideratum in geographical literature which Mr. Bidwell has ably and pleasantly filled up. His work not only contains very full information, but relates what there is to be seen in Majorca in an agreeable way. The chapter on the tenures of land, and on the system of partnership in Minorca resembling the *metayer* system in parts of Italy, followed by chapters on the agriculture, trade, and commerce of Majorca, supply a very complete picture of the condition of the island, which is illustrated by tabular statements in the appendix. An encouraging idea is given of the enterprise of the islanders, by the fact that a line of steamers has been established, and a railroad constructed and opened entirely by means of local capital.

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JOURNAL OF THE LINNÆAN SOCIETY. Number for 19th September, 1876.

THE Journal of the Linnæan Society for September 19th, 1876 (Zoology, Vol. xiii., No. 65), contains the first of an interesting series of papers on the geographical distribution of the birds described in the first volume of the British Museum "Catalogue of Birds," by Mr. Bowdler Sharpe. The present paper treats of the *Accipitres*, sub-order *Vulturidæ*. The paper is illustrated by a graphic series of nine maps, showing the range and probable distribution of each genus over the earth's surface; each map dealing with an Old World genus and the New World genus most nearly allied to it. For instance the cinereous vulture (*Vultur Monachus, L.*) of the Old and the condor (*Sarcorhamphus gryphus, L.*) of the New World appear on one map. We note some slight inaccuracies in the colouring; for instance, the Falkland Islands, in No. vi., which should (according to the explanation) be pink to indicate the presence of the turkey-vulture peculiar to that group, are left uncoloured.

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MAP OF PERSIA.*

MAJOR ST. JOHN'S Map of Persia is now ready for issue. The *Abstract of Surveys* for 1872-3 described the skeleton on which the details given in the map are fitted, and promised an account of the sources and extent of those details, which are nearly all new to cartography, on completion of the map. Commencing with determined frontiers, the coast-line of the gulf from Al-Basrah to Cape Jashk is taken from the Admiralty chart, corrected for the longitude of Bushire as ascertained by telegraph (*vide* Abstract for 1871-2). From Jashk to Gwádar the Makrán coast was reduced from the manuscript of Captain Stiffe's chart. On the north the coast-line of the Caspian Sea is delineated from the great Russian chart, the surveys for which were made in 1860-1. The Russo-Persian frontier from Mount Ararat to the Caspian is borrowed from the large scale official map of the Caucasus, and the Balúch and Sistán boundaries from the surveys by Majors St. John and Lovett, when serving on the commissions under Sir F. Goldsmid. These complete the list of the settled frontier of Persia. Surveyed, but not yet determined by treaty, is the long line of frontier from Mount Ararat to the Persian Gulf. The sheets of the Turco-Persian Frontier Commission Map were reduced to the scale of 4 miles to the inch, and photo-zincographed in the Ordnance Survey Office at Southampton; and from the reduced copy thus obtained, Major St. John borrowed the details for this part of the frontier. The eastern boundary of Persia other than in Balúchistán and Sistán is entirely unexplored, though fairly settled; the north-eastern frontier exactly the reverse.

The details available for the delineation of the vast country included by the above-mentioned boundaries vary in character, from careful surveys made by competent topographers to mere routes of travellers who did no more than jot down the names of their halting-places and guess the length of their marches. Nothing, however, has been inserted for which there is not *European testimony*, and no topographical details given for which there is not valid authority in the shape of maps compiled from original surveys or of tangible verbal description. The routes obtained from natives by Kinneir and others, which form a prominent feature on most published maps of Persia, are omitted, having been found eminently untrustworthy in every case in which they have been tested by subsequent travellers; and large blanks are thus left where previous maps show considerable detail.

Commencing in the north-west corner, the delineation of the province of Adarbaiján is derived from very full though very discordant sources. The large official map of the Caucasus gives in outline an immense amount of information regarding the Persian districts bordering the frontier, besides noting certain points fixed by triangulation. These last have, of course, been accepted, as have been the courses of streams and positions of villages in the immediate vicinity of the frontier line. But the greater part of the Persian topography on the Caucasus maps appeared on examination to be nothing more than a number of routes, probably obtained during the wars of 1827-29, and compiled on a few astronomical data since found to be erroneous. No attempt appears to have been made to fit the old work to the framework subsequently obtained. This was, however, partially done by M. Khanikoff in his map of Adarbaiján, which, considering that he had neither the Turko-Persian frontier survey nor the latest survey of the Araxes at his disposal, is a very creditable performance. Major St. John's topography is therefore mainly taken from M. Khanikoff's map, checked carefully throughout by General Monteith's earlier map, Sir Henry Rawlinson's travels, and the two frontier maps as far as they extend. Nearly the whole of Adarbaiján is thus filled in, but the country about Ardabil, the southern part of Lake Urmieh (about the extent of which, in that direction, authorities are at variance), and the country eastwards to Miana require exploration.

GILAN AND MAZANDARAN.—The Tálish Mountains, though their general contours are doubtless correctly shown in General Monteith's map, which has been generally followed, present a field of great interest both to the topographer, the botanist, and the naturalist. Equally unexplored and equally interesting are the rest of Gilán and whole of Mazandárán, of which nothing but the sea-coast and a few isolated spots can claim to be correctly shown. Lemm (1829) fixed the latitude and longitude of several places between Astarabád and Tehrán, and Khanikoff (1858-59), crossing the Alburz Mountains from Shahrúd to the former town, showed that they consist not

* Map of Persia, in 6 sheets. Scale, 16 m. to 1 in. Compiled principally from original authorities, by Major O. B. St. John, R.E., by order of H.M. Secretary of State for India. (Allen & Co., King & Co., Stanford, and Trübner & Co.)

of one but of three distinct parallel ranges. The new Russian map of Persia, of which more hereafter, gives a large amount of topographical detail, but, for the most part, apparently without authority. Much has therefore been rejected. Major St. John's own exploration on the Alburz near Tehrán afford for the first time an accurate delineation of the Shamirán Mountain, the upper part of the Lar River which nearly encircles Mount Damavand and divides it from the water-parting, and of the direct route from Tehrán to the Caspian through Anán, which is shifted 30 miles to the west of the position it has hitherto occupied on our maps.

IRAK.—Turning next to the great province of Irák, now merely a geographical expression, the topography of the district of Persian Kúrdistan is derived from entirely original sources—in the west from the Turko-Persian frontier survey, in the east from the great Russian map. This was compiled at Tiflis in 1869-71, but its publication has been postponed till the results of the Sistán and Balúchistán Boundary Commissions, then in progress, should be made public. Photographs of the manuscript, lent and copied in England, gave for the first time the detailed topographical result of M. Khanikoff's journeys in Eastern Persia, and the work of the Turko-Persian frontier surveys, which, it appears, extended over a far greater extent of country than that covered by the official map. The latter takes in the strip of frontier only; the surveys appear to have comprehended the whole of Khúzistán, and the roads from Karmánsháh to Sihna in Kúrdistan; to Isfahán through Búrújird and Khousar; to Shústar through Khoramábád. and to Dizfúl by the Karkhah Valley, as well as the whole western shore of Lake Urmieh. Of these surveys, only that of Khúzistán and a small portion of the Khoramábád road seem to have been transcribed by the English members of the mission, and deposited in the Foreign Office Library, where they were made over by Mr. Hertslet, C.B., to Major St. John. For the remainder, the latter has been dependent on the small scale photographs of the Russian general map, which there was much difficulty in deciphering. Nevertheless, they add immensely to our knowledge of the topography of those regions.

Other original sources of information in Irák are:—Major St. John's surveys of the main road from Bushire to Tehrán; Major Lovett's routes from Kóm to Tehrán through Saveh and through Varamin; and the same officer's road survey from Tehrán to Mashad. All the rest of Irák is very imperfectly shown. No proper survey of the great Kasvín-Tehrán and Tehrán-Hamadán roads is believed to exist. Sutherland's map and the manuscript map of the journeys of Sir John Malcolm's second mission are the main authorities for that part of Irák lying in the quadrangle of which Kasvín, Tehrán, Isfahán and Hamadán are the four corners. Of the second map mentioned, those portions done by Mr. Webb, the surveyor, are good, and, it appears from comparison with later surveys, checked by astronomical observations; but the rest is very inferior work. This part of Persia is not very interesting, except for the carpet manufactories of Faráan, or Faraghán, an unvisited district, but its exploration would be easy, and fill an unsightly gap in one of the most populous parts of Persia.

FARS.—The general positions of places in this province are shown with approximate accuracy on existing maps, but the physical features are as a rule given with a detail which existing data did not altogether warrant, and which are naturally extremely incorrect. The main authorities for Western Fars appear to have been Mr. Arrowsmith's maps illustrating General Monteith's paper on the road from Bushire to Shiráz, in the *Journal of the Geographical Society*, and the map of Shiráz and its environs in Baron de Bode's *Travels*. Both are very faulty. For Western Fars, the foundation of our atlas maps would appear to be D'Anville's map, on which Pottinger's, Ouseley's, Trézel's, and one or two other routes have been marked in addition to those above given. In the new map, the country in the quadrangle—Bushire, Kazrán, Shiráz, Firázabád—is from original surveys by Major St. John, who also gives both roads from Shiráz to Isfahán, together with the intervening country and the main road towards Karmán. Major Lovett's survey affords a delineation of the road from Niris to Shiraz, along the south shore of the salt lake of the same name, erroneously called Bakhtagán on older maps, and placed 20 miles too far north. The late Mr. Keith Abbott's carefully recorded observations have also been utilised, but not to the same extent as in the neighbouring district of Karmán, and a coast road travelled by Dr. Colville from Bushire to Bandar Abbass has been noted. This is particularly interesting as showing the outlet of the river system of Fars by the Mún, miscalled on maps the Prestkáf, river. For the very scanty details available between the Shiráz-Karmán road and the sea, older authorities have been followed. Much remains to be done here; no route has been recorded from Bandar Abbass to Karmán, and none surveyed from Bandar Abbass to Shiráz. The position of the important town of Lar is simply guessed.

KHUZISTAN.—An almost complete survey of this province, on the scale of one mile to the inch, was unexpectedly found in the library of the Foreign Office. Its plain parts are, perhaps, therefore more accurately shown than any other part of Persia. The mountains, however, with the neighbouring parts of Isfahán and Fars, comprising the upper basin of the Karún River, are almost a *terra incognita*. The solitary peak marked Daena on our maps, and supposed by Ritter to be 11,000 feet in altitude, is shown by Major St. John to be a ridge extending 30 miles, in a N.W. to S.E. direction, and covered with eternal snow. It can, therefore, be hardly less than 17,000 feet in altitude, and may be more. Under any circumstances, it is probably the most important mountain range in Persia as far as dimensions go.

YAZD AND KARMAN.—The astronomical observations recorded by M. Lenz when serving on Khanikoff's staff—though internal evidence and comparison with the work of other observers has shown they are not implicitly to be relied on—have served, after due correction, as a foundation for topographical details, collected by the late Quartermaster-Sergeant Bower, R.E., when travelling from Isfahán through Yazd to Karmán with Sir Frederic Goldsmid. Major St. John's survey from Bampur in Balúchistán through Bam to Karmán and onwards to Shiráz; Major Lovett's sketch of the country from Karmán to Bam by Khabbis; the same officer's route across the desert from Bam to Sistán with Sir F. Goldsmid; Mr. Keith Abbott's observations on the road from Sirján to Bam by a circuitous road to the south, and by the eastern road from Karmán to Yazd; and routes by Majors Murdoch and Euan Smith from Bam to Bandar Abbass, are shown for the first time on this map. The route of Dupré and Trézel between the Shiráz-Isfahán road and Yazd, has not, it is believed, been before noticed by geographers. The great range of mountains stretching from near Kóm to Balúchistán, though indicated by Khanikoff, and one of the most remarkable features of the geography of Persia, is now given its true proportions. Altogether there is, perhaps, as much novelty in this as in any other portion of the map, except the next.

BALUCHISTAN.—With the exception of the coast-line and Grant's route (1809) through Geh, everything is new in this part of the map, being entirely founded on the surveys of Majors St John and Lovett in 1871-72. Comparing it with existing maps, it will be seen that the dimensions of this part of Balúchistán are much restricted towards the north, where the direction of the axes of the mountain ranges, as in Karmán, is shown to be N.E. and S.W., instead of being parallel to the coast-line. The great desert south of the Halmand and all the northern hills are shown to be drained in the direction of Sistán, instead of into the Arabian Sea. Many erroneous names have been expunged, and a large amount of

topographical detail given. Much, however, remains to be done. The district of Bashakird, which properly forms part of Karmán, not Balúchistán, is quite unknown, as are the Irafshán and Sarhad districts, whilst no details exist regarding the country about Geh. It may be remarked, though the subject forms no part of Persian cartography, that a zone of unexplored country, nearly two degrees of longitude in breadth, intervenes between the frontier districts and the mapped parts of Kalat-i-Balúchistán.

KHURASAN.—The scanty map published with M. Khanikoff's Travels throws a flood of light on part of the geography of this the largest and perhaps the most interesting province of Persia, of which cartographers were not slow to take advantage. His routes will, however, be found given for the first time in detail on this map, owing to the kindness of M. Khanikoff in lending photographs of the manuscript. Partly covering the same ground, and elsewhere intersecting M. Khanikoff's routes in various points, are the surveys of Major Lovett when serving on Sir F. Goldsmid's Sistán Boundary Commission. That officer's map of Sistán, in particular, supersedes Connolly's imperfect sketch. Other work, original as far as a complete map is concerned, is a transcript of the Russian surveys north of the Atrak, showing the true direction and extent of the Kopet and Kuren chains, and of Baker's and Gill's work further east in 1873, including the hitherto unvisited Darah Gaz and Kalat-i-Nadiri, the most useful contribution made to the geography of Persia by private travellers since Fraser's journey over part of the same ground in 1829. Neither that traveller's route, nor that of Burnes from Kabushan to Astrabád, has been since followed, and remain unaltered on the map. Owing to the political interest which must attach for some years to come to the north-east frontier of Persia, regular additions to our knowledge of Northern and Eastern Khorasan may be confidently expected. Further south, all routes across the great salt desert have been carefully revised. One valuable addition is a direct route from Shahrúd to Yazd, by which it appears that the level of the lowest part of the desert must nearly reach that of the sea, and that the extent of the actual saline tract has been much exaggerated. Further details on this point will be found in Major St. John's general sketch of the physical geography of Persia forming part of the two volumes on *Eastern Persia* recently published.

Log Book.

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The Dutch Exploring Expedition to Sumatra.—The command of the expedition to explore the Jambi River, in Sumatra, has been entrusted to Lieutenant Schouw Sautvoort, of the Dutch Royal Navy, who will be supplied with a small steamer now ready to be sent out. Lieutenant Schouw Sautvoort has carefully studied every document bearing on the intended exploration, and, amongst others, a copy of the MS. report of the journey into the interior of Sumatra by Mr. Barnes, with a map, has been supplied from the India Office.

The Norwegian Deep-Sea Expedition.—The Expedition was at Reikavik from July 26th to August 3rd, but the lateness of the season made it impracticable to explore the sea between Iceland and Greenland. From Iceland a line of soundings was run south and then N.E., which showed the transition from the warmer Atlantic water at the bottom to the Arctic water east of Iceland. Between the east of Iceland and Namsos several deep-sea soundings were taken, at depths from 1000 to 1800 fathoms, midway between Iceland and Norway, in 64° 55′ N. The weather was generally stormy, and the expedition arrived at Namsos on the 14th of August. Leaving Namsos on the 20th a series of soundings was taken from Foldenfjord due west, and a bank with only 300 fathoms was found 100 miles off the nearest coast. The 'Voringen' arrived at Aalesund on the 23rd, and on the 26th of August the expedition returned to Bergen.

Expeditions to Northern Siberia.—Professor Nordenskiold has returned from his trip from the Yenisei. He found the sea free of ice, and performed the voyage there and back in five weeks. He feels sure that the route thus opened by him will be available for purposes of commerce. The vessel chartered by the Professor was the 'Ymer,' a steamer of 400 tons burthen, and forty-five horse-power, with a crew, all told, of fifteen men. The expedition was to have ascended the Yenisei as high as Dudino, and then take on board three Swedish botanists who were to have made their way thither by land *viâ* St. Petersburg, and whose names are Drs. Theel, Tryborn, and Arnell. The brief intelligence, however, respecting the return of the expedition does not enable us to know whether this programme was carried out in its entirety. The Swedes were to have been accompanied by a Russian captain of a merchant-vessel, by name Schwanebach, who was to make his way to the Yenisei, to convey a cargo of Siberian products in a new clipper-built schooner, 'Northern Light,' from that river, round the North Cape to St. Petersburg.

We hear also that Professor Ahlquist, of Helsingfors, intends, in company with a young student of the University there, to start for Tobolsk in February next, with the object of conducting ethnographical researches throughout the region of the Ob basin.

The most recent intelligence respecting the German Expedition to Northern Siberia, is dated Obdorsk, July the 14th, and reports the arrival of Drs. Finsch and Brehm, and Count Waldburg-Zeil at that most northern settlement on the Ob River. Twelve cases of collections have already been despatched from Barnaul to Germany.

In our next number we propose to give a full account of the doings of the Bremen Expedition in their progress through Siberia. The Society for the Prosecution of German Arctic Research deserves encouragement from all sides for their public-spirited efforts in promoting expeditions, first to Greenland, and next (in the present case) to Siberia. We trust that in the organisation of these expeditions, the requirements of science will always be kept in mind, as well as the purely commercial objects, for which, in Bremen, there are sure to be found ready advocates.

The Indian Marine Survey Department.—This most useful department continues its labours under the superintendence of Captain Taylor. A handy little book, illustrated by a map, has just appeared at Calcutta, containing a list of lighthouses and light-vessels in British India, including the Red Sea, corrected to July 1876 by Mr. R. C. Carrington, the Superintendent of the Drawing Branch. All the particulars of each light are given as in the Admiralty List. A series of important Hydrographic Notices has also been commenced. No. 1 contains information on the Bay of Bengal and Burmese coast resulting from the recent survey of the approaches of the Rangoon River, by Navigating-Lieut. Jarrad, R.N.,

and Nos. 2 and 3 consist of information collected by Captain Taylor himself, while on an inspection tour along the coast of British Burmah.

The Hot Springs of Bosher and Ghullas in Oman.—Surgeon C. T. Peters, M.B., has placed on record the particulars of a visit paid by him in March 1875 to the Hot Springs of Bosher and Ghullas in Oman. These springs had been before visited by Lieutenant Stiffe in 1859, and an interesting account by him will be found in the *Proceedings of the Bombay Geographical Society*. The route thither is by sea from Muscat to Muttrah, and leads past two or three horseshoe-shaped recesses, where villages have sprung up, consisting chiefly of a maritime population whose crafts are employed in interchanging the products of Arabia and the Persian Coast with those of India and Zanzibar. Muttrah is a thickly populated place, and stretches for half-a-mile along the coast. Here the travellers landed and made their way over to the Ghulla Springs, which are situated at the foot of a hill of limestone rocks. The principal spring is called *Hummum*, and has a temperature of 112° Fahr.; the next, called *Munsook*, is approached by a cavern, the bottom of which is covered by a white crust of stalactites composed of carbonate of lime. This is the spring most frequented by invalids. There are four other springs in the vicinity, and the temperature of these varies between 83° and 112°. The water from all the hot springs is first allowed to cool down in large reservoirs, and is afterwards used for irrigating the neighbouring gardens, the richness and luxuriance of which are all owing to these springs. Bosher is a small village about 4 miles from Ghulla, on the way to Muscat. This place contains the country seats of several of the Arab citizens of Muscat, surrounded with beautiful orchards and planted with various kinds of lime, pomegranate, date, fig, custard apple, and other desert fruit-trees, and magnificent roses of rare fragrance. The path between Ghulla and Bosher lies across a number of sandhills, some of them of gigantic dimensions, with sea-shells of numerous existing species embedded in the sand, while on the other side of the valley of Bosher extends a chain of limestone formation, where layers of fossilized molluscs were found among the shale or marl overlying the tops of these hills. The valleys were covered with patches of the true *Acacia Arabica*, milk bushes, some tamarisks, and colocynth, which in one valley is very abundant; no grass, however, could be seen, save along the water-courses. The principal crop was the date, and at the time of Dr. Peters' visit the villagers were busy in fertilising the clusters of blossoms in the female trees by taking the *stamina* from the male plants and placing it in the centre of each cluster of blossoms. In some parts of Arabia, the male plants are planted to windward, and the *pollen* grain is wafted by the wind, and fertilises the blossoms in all the trees in the garden. After visiting Wateyah, where the Sultan of Muscat has a summer-palace, the travellers came to Darset, and after passing through a rich valley planted with date-trees, took boat on arriving at the coast and returned to Muscat. A careful analysis of the water of three of the springs was made by the chemical analyser to the Bombay Government.

Peru.—Don Manuel Pardo, Corresponding Member of the Royal Geographical Society, who has done so much for the advancement of geographical knowledge, concluded his constitutional term of office, as President of Peru, on the 2nd of August, 1876.

His last speech, as President, was his address on the opening of Congress on the 28th of July, when he submitted a review of his administration during four memorable years. He appealed to the pacific transmission of the supreme power as a proof of the moral and political progress of the people. During his term of office he introduced several excellent measures. One was the establishment of municipal institutions throughout Peru. Another was the opening of diplomatic relations with China and Japan. With China a treaty determines the principles which will rule in future the emigration of Chinese to Peru, and with Japan was celebrated a treaty of amity and commerce. The police force was reorganised, and public instruction has been extended in all its branches. The convent of Santo Domingo at Cuzco, on the site of the ancient Temple of the Sun, has been converted into a male normal school, and the convent of San Pedro, in Lima, has become a school of a similar class for females. The army has been reduced to less than 3000 men, and a national guard, created by Señor Pardo, has been found efficient in the preservation of public order. A naval training school for boys, and a naval college for officers, have been established, and are in good working order. Administrative reforms have been introduced into the Treasury offices and the Custom-houses. Señor Pardo's great difficulty has been the deficit in the revenue, caused by the reckless expenditure of his predecessor, Colonel Balta. His chief financial task has been to avert or lessen the consequences of that recklessness, and to provide for the future. The proceeds of the guano had been annually discounted for thirty years. New discounts would have obviated the difficulties during Señor Pardo's term of office. But his great title to his country's gratitude is that he set aside all selfish considerations, and courageously faced the difficulty. He has, through the agency of his successor, General Prado, made an arrangement which will eventually secure the service of the foreign debt, even if the yield of guano came to an end, when that product would be replaced by nitrate. Two-thirds of the proceeds of guano will go to the payment of interest on the foreign debt, and one-third to meet internal expenditure. The total expenditure is 18,500,000 *soles*, which is met by 4,000,000 from guano, 6,000,000 from nitrate, and 8,500,000 from customs and general revenue. As regards railways, the lines from Arequipa to Puno, from Ylo to Moquegua, from Pacasmayu to La Vina, have been opened by Señor Pardo. He has also caused to be constructed the reservoirs on the Rimac, and the moles at Arica and Pacasmayu; and has established steam navigation on Lake Titicaca.

As regards geography and statistics, Señor Pardo has promoted the exploration of all the Peruvian tributaries of the Andes, has liberally aided the scientific labours of Raimondi, and the publication of his great work. He has also formed a statistical department, the first work of which was the classification of all the inhabited portions of the Republic, in order to serve as a basis for the census. The census was taken this year on the same day in all the towns, and in the same week in all the rural districts.

General Don Mariano Ignacio Prado was installed as President of Peru on the 2nd of August, 1876, this

being his second term of office. During his first (1865-68) he gallantly repulsed the Spaniards when their fleet made an attack upon the port of Callao, on May 2nd, 1866. We trust, and we have every reason to believe, that the new President will follow in the footsteps of his patriotic, able, and enlightened predecessor, Don Manuel Pardo. That statesman retires into private life with the warmly expressed gratitude of his countrymen.

New Guinea.—According to the most recent accounts, Signor D'Albertis, the Italian naturalist and traveller, had left Sydney on the 20th April last, in the 'Brisbane,' with the object of exploring New Guinea, on behalf of an Australian company. He has been supplied with a steam launch, 25 feet long, and is accompanied by an engineer, two sailors, and a boy, besides ten natives. He proposes to ascend the Fly River as far up as may be, and thence to make his way by land to Port Moresby. He has accepted this mission purely as a labour of love.

M. Miklucho-Maklay has undertaken a third visit to New Guinea (Astrolabe Bay), mainly in order to fulfil a promise made by him to the natives on the occasion of his last visit in 1871-2, but also to complete some of his researches commenced then. From his letters he appears to be an enthusiastic advocate of the rights of the aborigines against foreign intrusion.

The French appear to be anxious to renew their acquaintance with this important island, which since the time of Dumont D'Urville they have neglected. M. Raffray (known for his travels in Abyssinia, see *Geographical Magazine*, for August 1875, p. 253) and M. Maurice Maindrof, of the Entomological department of the Paris Museum, propose to visit Ternate, Waigheu, Dorey, and the vicinity of Geelvink Bay, chiefly in the interests of natural history.

The Dutch man-of-war, 'Soerabaya,' Captain Swaan, during the latter part of last and the beginning of this year, explored a large portion of Geelvink Bay and the islands north of it, and the coast of the mainland as far eastward as Humboldt Bay. Amongst other discoveries, it has verified the modifications in Geelvink Bay spoken of by Signor Beccari, and has thrown some additional (though scanty) light on the great river which previous travellers had lain down as debouching at D'Urville Point. Beccari (who accompanied the Dutch expedition) considers that a large river probably discharges itself there into the sea through a delta, and that it rises in the central mountain range of New Guinea, probably the "Charles Lewis" mountain chain. A great impediment, in the shape of a bar, appears, however, to obstruct every channel.

Beccari considers that the population of New Guinea which traffics with other portions of the Netherlands Indies, probably amounts to 102,000. The annual exports would not require more than a 400 or 500 ton vessel, and the value thereof cannot exceed 20,000*l.* Tortoise-shell, birds of paradise, and mother-o'-pearl, figure among the chief articles. Slaves are exported from New Guinea to Ternate, Seram-laut being the chief mart for them. Beccari makes some remarks on the powers of the different rajahs, and then proceeds to consider the question of the effect of the climate on health. He observes that a stay on the coast for a few days or even for a month does not produce ill effect, but that a longer sojourn will generally bring on an attack of fever; this, however, being put out of the question, the climate is not prejudicial. Fever is nearly always induced by exhaustive labour, exposure to the sun, and, more especially, poor diet—in short, by anything calculated to weaken and exhaust the system.

We are indebted to Signor Cora's *Cosmos* for the above interesting particulars about New Guinea. He has illustrated his article by a new and important map, embracing a large slice of the northern coast from Dorey to Humboldt Bay.

Correspondence.

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MR. RAVENSTEIN'S MAPS OF THE AFRICAN LAKE REGION.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—In the current number of the *Geographical Magazine*, page 247, exception is taken to the map of the Victoria Nyanza, constructed by me and published in the *Proceedings of the R.G.S.*, and preference expressed for that which appeared in the *Magazine* for December 1875.

The writer admits that in the compilation of that map he had not the advantage of consulting Colonel Grant's map of his route (and I may complete his remark by saying that had he been able to use that map, as I was, he would have produced something different from that which he still adheres to), but that the bearings published by Colonel Grant, in Vol. XLII. of the *Journal of the Royal Geographical Society* were carefully consulted—and, here I may add, were not adopted. He further asserts that either the route as laid down on the map in the *Proceedings* is wrong, or the bearings are.

I am aware that in one or two instances it is impossible to reconcile the bearings one with another and with the map, but it will be apparent to any one who will take the trouble to protract these observations (allowing a magnetic variation of about 10° W.) that I have succeeded in the majority of cases in adapting them satisfactorily in the map constructed by me, at the same time keeping Captain Speke's map intact as far as positions are concerned, and adjusting Stanley's work as well as possible—certainly, I think, as well as Mr. Ravenstein has; in the map in the *Geographical Magazine*, however, the exception is the rule, and in scarcely a single instance will it bear testing, either for bearings or distance.

Had Mr. Ravenstein had access to Colonel Grant's MS. map of his route, he would have modified his ideas with respect to the position of Kyabogo (see *Geographical Magazine*, December 1875, page 373), and not shifted it some 16 miles E. of the longitude given by Grant; on the contrary, he would have found that he was practically correct, and that instead of being S.E. of Ugonzi, a point fixed by Speke, though not actually observed, its direction is almost S.W. Again, Luchamu he places N.E. of Nyagussa, another of Speke's fixed points, instead of somewhat W. of N.; consequently the bearings given by Colonel Grant from these positions must all be incorrectly applied.

But I need not cite more inconsistencies, I am quite willing to leave the matter in the hands of those who will compare the two maps with Colonel Grant's paper and with Stanley's delineation of the coast, though in this last I confess I have been compelled to make a considerable alteration at Sasse I., agreeably to Colonel Grant's assertion that the horizon from around the head of Katonga Bay was entirely open, and his delineation of that island. Further, I think I have demonstrated that Speke's map is *not* so faulty as to render it impossible to lay down Grant's route correctly upon it.

Since the map in the *Proceedings* was published, I have again gone over the same work in preparing a

map of Colonel Grant's route for the next *Journal*, in which it will be seen that, although I have made some minor alterations, the result is substantially the same.

I do not know that it is any part of my business to find fault with Mr. Ravenstein's topographical rendering of Stanley's last letters, but certainly, as I read them, I must object to the direction of the Katonga River, and the position of Mount Gambaragara, which is evidently in the vicinity of the peninsula of Usongora. Again, it appears to me that Stanley visited Mtesa at or somewhere near his capital after he arrived at Dumo, and from thence proceeded to the Albert. It would also seem that Mr. Ravenstein supposes that Signor Gessi sailed past Beatrice Gulf, but that he has not delineated it. I am, however, of opinion that the part of the Albert Nyanza reached by Stanley is beyond any point seen by Gessi, and that consequently the lake requires lengthening to that extent, as, indeed, Mr. Ravenstein has done. I am, &c.,

WM. JNO. TURNER.

1, SAVILE ROW, BURLINGTON GARDENS, W.,
26th September, 1876.

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BAKER'S "CLOUDS IN THE EAST."

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—In the current number of the *Geographical Magazine*, I observe there is a letter from Major St. John, in which that officer submits that the critique of *Clouds in the East*, in the previous number, hardly does justice to the value of Baker's and Gill's geographical explorations in North-Eastern Persia. Major St. John, quoting from your review of *Clouds in the East*, asserts that your critic says, "Their travels contain records that may be useful to geographers." Now I do not see that your reviewer said this. With *Clouds in the East* before him, a work which purports to be by V. Baker, and of which it does not appear that Gill was a joint author, your reviewer said "these travels contain records, &c." Perhaps, as regards this, I may venture to remark that the carefully drawn up manuscript routes of the intelligent young engineer officer who accompanied the author of *Clouds in the East* is one thing, a book of travels which bears evident signs of haste and carelessness in its pages, is altogether another. Your reviewer had not the advantage of having, like Major St. John, the former placed at his disposal; he was thus unable to subject the travels to a critical comparison with the MS. notes, such as is essential in the estimation of the value of independent descriptions of a little-known country, and such as the compiler, at the India Office, of the map of Persia, no doubt, made. In the *Geographical Magazine* of July 1875 it was stated that the journals of Captain Napier, who subsequently went over some of the same ground as the author of *Clouds in the East*, indicated necessary modifications of V. Baker's map. Under the circumstances, your reviewer could not well say more than that the travels "contain records that may prove useful to geographers." Major St. John says he "can testify that they *have* been useful." Thus, although Major St. John only speaks of Lieutenant Gill's valuable MS. notes, it is to be presumed, since he has so much to say in behalf of *Clouds in the East*, that he has critically compared the one with the other, and this being so, your critic's statement that the records "may be useful" is shown to have been a correct one.

Major St. John is, no doubt, perfectly correct in regard to his enumeration of the well-known names of those travellers who have visited Northern Khurasan, and of whom record exists. The chronological order in which he has placed them is no doubt equally faultless. It is known that none of them visited Kalát-i-Nadiri. But considering what your reviewer has himself heard beyond the eastern borders of Persia, of Europeans every now and then travelling in those countries, and visiting places of note, and of whom the Geographical Society never hears even the name, and also remembering that some of Runjit Singh's officers, French and Italian, came to the Punjáb after travelling through Persia and visiting various districts of Khurasan, he considered that he would be nearer the truth in saying that Kalát had been but rarely visited by Europeans, than if he had asserted that the author of *Clouds in the East* was the first European who had ever set foot within the natural fortress.*

I understand that, as regards the Atrak, Captain Napier makes the Karakazan Spring, *the* locally considered source of the river, 2¼ miles from Shirwan, but he speaks of a higher permanent source, about 15 miles N.E., and makes the largest tributary to be the Garm-i-khas, which drains the plateaux N. and E. of Kuchan, the western slopes of the Kalát chain, the Kuchan plain, and mountains bounding it on the south. The Garm-i-khas passes, it appears, S. of Kuchan, and receives the waters of the Karakazan and a small stream from the north. From the point at which the Atrak enters the Kuchan plain to the Tang-i-Rizabad, a narrow gorge, is from 45 to 50 miles. It then goes W.N.W. and W. between high mountains to Mana (Baker's Monah), then about 80 miles to the Shat-i-Atrak, where it is joined by the Chandyr from the north.

As regards the spelling of Boomahoo, it is not clear how the orthodox spelling can be Boomahann, or Bumahanh, because no system of orthodoxy or orthography would admit of a choice between the double *n* and *nh* in the transliteration of a Persian word. The question is, however, somewhat complicated; for not only does Burnes make it Baumein, Baker Boomahoo, and Major St. John Bumahann or Bumahanh, but I understand that Captain Napier spells it Boomahind, and Mr. Eastwick Bamahan, with an accent on the second *a*. The word "Bumahan," which is very close to Major St. John's orthography, means an earthquake in Persian, and the conversion of the last *a* into a *u*, when followed by a final *n*, is, I need hardly say, very common in Persia. But if there is a difficulty in the explanation of the word Boomahoo, which the writer of the letter in your magazine gets over by attributing it either to a printer's error, or to an accidental guess at the word on the part of the author of *Clouds in the East*, there remains a still greater about his Boohoo: on this extraordinary name of a Persian village, Major St. John has, I observe, nothing to say.

In regard to the height of the mountains near Kalát, Major St. John is right and your reviewer wrong, and being thus at fault, the latter will, no doubt, be grateful for thus having had his mistake pointed out to him. Your reviewer certainly misquoted the map as regards the height of the pass near Kalát-i-Nadiri, but some of the maps appended to the travels are very indistinct, and smeared at the point in question. But when Major St. John says, in pointing this out, that your reviewer "again" misquotes the map, it would have been only fair had he pointed out where the map was misquoted by him before.

I was not aware that there was any "mystery" about the Salt Desert of Khurasan. It is a pathless waste, where neither man nor beast can exist, and its limits are known from the routes of Christie, Claude Clerk, Macgregor, and others, who have skirted it in their travels. Major St. John asks your reviewer to lift the veil of this so-called mysterious region. But as there really is no veil to lift, it would seem to be a mere loss of time imagining its existence. Is it possible that while writing of the Salt Desert of Khurasan, the writer of the letter in your magazine of September was thinking of Mokanna, the Prophet of Khurasan, and hence this allusion to veil and mystery?

I am, &c., X.

* Kalát-i-Nadiri was visited by Colonel Shee, an officer serving under Abbas Mirza, in about 1832; by Sir John McNeill in 1838; and by two other Europeans, Beke and Borowski.—*Ed.*

Proceedings of Geographical Societies.

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GEOGRAPHICAL WORK AT THE BRITISH ASSOCIATION.

THE British Association met this year at Glasgow, and the Sectional Meetings took place on the 7th, 8th, 11th, and 12th of September. The Geographical Section (E) was presided over by Captain EVANS, R.N.; but, except when Commander Cameron read his paper, it was very thinly attended, and several interesting papers on physical geography were read and discussed in other Sections, especially in Sections A, D, and C. Section E met in the Queen's Rooms.

On September 7th the proceedings were opened by an address from Captain EVANS on the subject of the voyage of the 'Challenger.' He prefaced his remarks by a general review of deep-sea exploration, and of the hypotheses of ocean circulation, a problem which he held to be still unsolved. He observed, however, that the agency of the winds was most active in bringing about great movements on the surface waters.

With reference to the same subject, on September 11th, Staff-Commander TIZARD, R.N., late of H.M.S. 'Challenger,' read a paper "On the Temperatures obtained in the Atlantic Ocean during the cruise of Her Majesty's ship 'Challenger.'" Everywhere, he said, except in the immediate neighbourhood of ice, similar results were obtained, with the general effect of showing that the water on the surface was invariably warmer than that beneath; in fact, that the temperature everywhere decreased as the depth increased. In many cases this decrease of temperature continued to the bottom, but in other cases, after a certain depth was reached, no decrease took place. He gave as the reason of this, that although the two areas of the water where these phenomena existed formed parts of the same ocean, they were really separated by submarine ridges into distinct basins. Over a great part of the Atlantic, the bottom temperature had this peculiarity, that if the depth was less than 2000 fathoms, the temperature at the bottom was lower than that at any intermediate depth, but where the depth exceeded 2000 fathoms, the temperature was nearly the same as at that depth, no matter how much lower the bottom might be; and this held good for three-fourths of the ocean. In the remaining fourth, the temperatures obtained at the bottom were much lower than in other parts, and this fourth was not at either extreme, where there was a large amount of surface cold, but occupied the whole of the western position of the South Atlantic as far north as the Equator. The sections of the varying temperatures prepared from the results of the 'Challenger' soundings showed peculiarities as to surface and lower heat, for which he accounted by the consideration that the power of the sun in directly heating the water below the surface appeared to be extremely limited, even in tropical countries, and insufficient, even there, to influence the temperature of the water below 100 fathoms. The heat given to the surface water decreased as the higher latitudes were reached, until a position was attained where the temperature was at the freezing point of salt water. In the equatorial region, although the precipitation of rain might not be equal to the evaporation, it was still sufficient, in conjunction with the temperature, to prevent the surface from becoming denser than the water below, so that the heated water remained on the surface. Were this water to remain in the same position, an excess of evaporation over precipitation would doubtless in time render its salinity sufficient to cause it to sink; but this surface water was, from the friction of the trade winds, aided by the earth's motion, constantly being propelled to the westward, and meeting in the west with the South American Continent, was deviated to the northward, so that the greater part of this heated surface film was forced into the North Atlantic with sufficient violence to cause the rapid current to issue from the Strait of Florida, familiarly known as the Gulf Stream, which discharged into the North Atlantic a volume of heated water of 4½ cubic miles per hour, or 108 cubic miles per day. The salinity of this water was at first greater than that of the water beneath, but, becoming cooled from contact with the colder air, increased in density until its density became such as to cause it to sink, and in sinking it imparted its heat to the subjacent layers. It appeared to be proved that the column of water in the North Atlantic was heavier than in any other part; that the cold stream was almost entirely confined to depths greater than that of the ridges separating the Atlantic basins from each other, and from the Antarctic basin; and that at this depth of 1960 fathoms the temperature was 35°, or nearly the same as that of the Atlantic basins. It might be asked, however, if the water at the bottom of the Atlantic basins was being constantly expelled in consequence of the density of the column there exceeding that of the columns in the surrounding basins, and this water was constantly receiving additions, how was it that the bottom water retained the comparatively low temperature of 35°? This might be accounted for in this way: In any lake, no matter whether fresh or salt, the temperature of the bottom water would be the mean temperature of the coldest part of the year over the coldest part of the lake, always provided that this temperature was above the point of temperature of maximum density of the water in the lake, and that it was deep enough to prevent the solar radiation affecting the water in the summer months, for the surface film being rendered more and more dense as the cold increased, would sink to the bottom.

Mr. J. MURRAY then stated some results of his observations on board the 'Challenger,' "On the Geological Distribution of Oceanic Deposits." These deposits were stated to be of three classes: first, those which were found all round the continents and islands existing over the world, without any exception, but which varied according to the places where they were found; secondly, those found at from 200 to 300 miles from the land, consisting of shell and lime deposits, and covering most of the bed of the ocean; thirdly, those existing at other depths, and which were of silicious character. The observations showed that a curious relation existed between the nature of the deposits and the depth of the water. It was also pointed out that in the neighbourhood of volcanic islands, and in no other places, were found large deposits of manganese, coating the shells and other things brought up from the bottom.

Mr. BUCHANAN submitted a communication of observations of the 'Challenger,' bearing upon "The Specific Gravity of the Surface-water of the Ocean." He also explained the principles on which he constructed a new deep-sea thermometer with which his observations were made.

In the Physical Section (A) the President, Sir WILLIAM THOMSON, delivered an address containing much that will be interesting to geographers. Such were his remarks on the high internal temperature of the earth. He said:—The greatest depths that have been reached in observations of underground temperature were scarcely one kilometre, and if a 10 per cent. diminution of the rate of augmentation of underground temperature downwards were found at a depth of one kilometre, that would demonstrate that within the last 100,000 years the upper surface of the earth must have been at a higher temperature than that now found at the depth of one kilometre. Whatever might be the age of the earth, they might be quite sure it was solid in its interior—not absolutely throughout its whole volume, for there certainly were spaces in volcanic regions occupied by liquid lava; but whatever portion of

the whole mass was liquid, such portion was small in comparison with the whole, and one must utterly reject any geological hypothesis which, whether for explaining underground heat or ancient upheavals and subsidences of the solid crust, or earthquakes or existing volcanoes, assumed the solid earth to be a shell of 30 to 200 or 500 or 1000 kilometres in thickness, resting on an interior liquid mass. That conclusion was first arrived at by Hopkins, who might be called the discoverer of the earth's solidity, and a rigorous application of the perfect hydrodynamical equation led still more decidedly to the same conclusion. But interesting in a dynamical point of view as Hopkins' problem was, it could not afford a decisive argument against the earth's interior liquidity. It assumed the crust to be perfectly stiff and unyielding in its figure. This, of course, it could not be, because no material was infinitely rigid; but, composed of rock and possibly of continuous metal in the great depths, might the crust not as a whole be stiff enough to practically fulfil the condition of unyieldingness? No; decidedly it could not; on the contrary, were it of continuous steel and 500 kilometres thick, it would yield very nearly as much as if it were indiarubber, to the deforming influences of centrifugal force and of the sun's and moon's attractions. Now, although the full problem of precession and nutation, and what was now necessarily included in it, tides, in a continucus revolving liquid spheroid, whether homogeneous or heterogeneous, had not yet been coherently worked out, he thought he saw far enough towards a complete solution to say that precession and nutation would be practically the same in it as in a solid globe, and that the tides would be practically the same as those of the equilibrium theory. From this it followed that precession and nutation of the solid crust, with the practically perfect flexibility which it would have even though it were 100 kilometres thick and as stiff as steel, would be sensibly the same as if the whole earth from surface to centre were solid and perfectly stiff. Hence, precession and nutation yielded nothing to say, against such hypotheses as that of Darwin, that the earth as a whole took approximately the figure due to gravity and centrifugal force, because of the fluidity of the interior and the flexibility of the crust. The hypothesis of a perfectly rigid crust containing liquid violated physics by assuming preternaturally rigid matter and dynamical astronomy in the solar semi-annual and lunar fortnightly nutations; but tidal theory had nothing to say against it. On the other hand, the tides decided against any crust flexible enough to perform the nutations correctly with a liquid interior, or as flexible as the crust must be unless of preternaturally rigid matter. Suppose the earth this moment to be a thin crust of rock or metal resting on liquid matter. Its equilibrium would be unstable! And what of the upheavals and subsidences? They would be strikingly analogous to those of a ship which had been rammed: one portion of crust up and another down, and then all down. He might say with almost perfect certainty that, whatever might be the relative densities of rock solid or metal at or about the temperature of liquefaction, it was quite certain that cold solid rock was denser than hot melted rock; and no possible degree of rigidity in the crust could prevent it from breaking in pieces and sinking wholly below the liquid lava. Closely connected with the question of the earth's rigidity, and of great scientific and even of greater practical moment, was, he said, the question, How nearly accurate was the earth as a timekeeper? and another of, at all events, equal scientific interest was, How about the permanence of the earth's axis of rotation? After pointing out the discordant character of the results arrived at on this subject, Sir William said, we must not infer that the deviations indicated by Peters, Maxwell, and Newcomb were unreal. On the contrary, any that fell within the limits of probable error in the observations ought properly to be regarded as real. There was, in fact, a *vera causa* in the temporary changes of the sea level due to meteorological causes, chiefly winds, and to the melting of ice in the Polar regions, and return evaporations, which seemed amply sufficient to account for irregular deviations of from ¼" to 1-20th" of the earth's instantaneous axis from the axis of maximum inertia, or, as he ought rather to say, of the axis of maximum inertia from the instantaneous axis. In closing, Sir William said that as for geological upheavals and subsidences, if on a very large scale of area, they must produce, on the period and axis of the earth's rotation, effects comparable with those produced by changes of sea-level equal to them in vertical amount. For simplicity, calculating as if the earth were of equal density throughout, I find that an upheaval of all the earth's surface in north latitude and east longitude, and south latitude and west longitude, with equal depressions in the other two quarters, amounting at greatest to 10 centimetres, and graduating regularly from the points of maximum elevation to the points of maximum depression in the middles of the four quarters, would shift the earth's axis of maximum moment of inertia through 1" on the north side towards the meridian of 90° W. longitude, and on the south side towards the meridian of 90° E. longitude. If such a change were to take place suddenly, the earth's instantaneous axis would experience a sudden shifting of but 1-300th" (which we may neglect), and then, relatively to the earth, would commence travelling, in a period of 306 days, round the fresh axis of maximum moment of inertia. The sea would be set into vibration, one ocean up and another down through a few centimetres, like water in a bath set aswing. The period of these vibrations would be from 12 to 24 hours, or at most a day or two; their subsidence would probably be so rapid that after at most a few months they would become insensible. Then a regular 306 days' period tide of 11 centimetres from lowest to highest would be to be observed, with gradually diminishing amount from century to century, as, through the dissipation of energy produced by this tide, the instantaneous axis of the earth is gradually brought into coincidence with the fresh axis of maximum moment of inertia. If we multiply these figures by 3600, we find what would be the result of a similar sudden upheaval and subsidence of the earth to the extent of 360 metres above and below previous levels. It is not impossible that in the very early ages of geological history such an action as this, and the consequent 400 metres tide producing a succession of deluges every 306 days for many years may have taken place; but it seems more probable that even in the most ancient times of geological history the great world-wide changes, such as the upheavals of the continents and subsidences of the ocean beds from the general level of their supposed molten origin, took place gradually through the thermo-dynamic melting of solids and the squeezing out of liquid lava from the interior. As to variations in the earth's rotational period since March 19, 721 B.C., a day on which an eclipse of the moon was seen in Babylon, commencing "when one hour after her rising was fully passed," the earth has lost rather more than 1-3,000,000th of her rotational velocity; or as a timekeeper, is going slower by 11½ seconds per annum now than then. According to this rate of retardation, if uniform, the earth at the end of a century would, as a timekeeper, be found 22 seconds behind a perfect clock, rated and set to agree with her at the beginning of the century. Newcomb's subsequent investigations in the lunar theory have, on the whole, tended to confirm this result, but they have also brought to light some remarkable apparent irregularities in the moon's motion, which, if real, refuse to be accounted for by the gravitational theory without the influence of some unseen body or bodies passing near enough to the moon to influence her mean motion. This hypothesis Newcomb considers not so probable as that the apparent irregularities of the moon are not real, and are to be

accounted for by irregularities in the earth's rotational velocity. If this is the true explanation, it seems that the earth was going slow from 1850 to 1862, so much as to have got behind by 7 seconds in these 12 years, and then to have begun going fast again so as to gain 8 seconds, 1862 to 1872. So great an irregularity as this would require somewhat greater changes of sea level, but not very much greater, than the British Association Committee's reductions of tidal observations for several places in different parts of the world allow us to admit to have possibly taken place.

Another interesting paper was read by Professor JAMES THOMSON on the origin of windings of rivers in alluvial plains, in which he gave a new theory of the motion of water round bends in rivers and in pipes. He explained the reason why in alluvial plains bends of rivers went on increasing by the wearing away of the outer bank, and the deposition of mud, sand, and gravel on the inner bank. The chief point of the new view now experimentally proved was that the water, in turning a bend, had centrifugal force, but a thin bed of the water at the bottom was retarded by friction of the bottom, and so had less centrifugal force than a great body of the water flowing over it. The bottom layer flowed inwards obliquely across the channel towards the inner bank, and rose up in its comparatively retarded condition between the inner bank of the rapidly flowing water and protects the inner bank from the scour, and brought with it sand and other detritus from the bottom, which it deposited along the inner bank.

Sir WILLIAM THOMSON read the Report (in Section A) from the Committee on Tides. In his observations on this Report he observed that if the rise and fall of the tide anywhere was considerable in comparison with the depth, there where over-tides. Places on the ocean where the water ranged from 10 to 30 or 40 fathoms did not show over-tides; but where the water was only 5 or 6 fathoms deep, and the depth at low water was not half so much, these places were peculiarly liable to over-tides. The time of the highest tides was on our coast about two days, but on the western coast of Europe it was thirty or forty hours later than the full moon. If the Mediterranean got its tides through the Straits of Gibraltar, instead of there being smaller retardation, there would be greater retardation. It was evident, however, that the tides of the Mediterranean were not derived from the Straits, but must result from the direct action of the moon on the waters of the Mediterranean. The tides about the coast of Italy were so small, that one might not be aware of them. The wash of the water up and down, with very moderate waves, more than swamped any evidence of rise and fall. Generally, the people living on the Mediterranean shores did not know there was any such thing as tides, and hitherto there had been no scientific analysis of the Mediterranean tides, so that the experiments at Toulon were the commencement of a new epoch in this branch of science. At Toulon, during ordinary tides, there was only a rise and fall of 2¼ inches, and at spring-tides that was increased to 3½ inches, or 7 inches from the lowest to highest point. No theory had yet been found why the diurnal tide should be so small in the Mediterranean and so comparatively great in all other oceans. When the sun and moon conspired, and when the diurnal effect was in the same direction as the semi-diurnal, the whole rise and fall was about a foot. The highest rise above the mean and the greatest fall below the mean was 5 inches, but that fall was made by the diurnal tide, and would correspond to the greater day tide in one part of the month, and the greater night tide in another part of the month. The subject of diurnal and lunar tides was one of great importance, and unhappily had been neglected by the British Admiralty in their tide-tables. It was said these tables were sufficient for the purposes of the mariner, but that was not the case, for even on the east coast, if a vessel happened to get on a rock, it was a serious question whether the morning tide might be considered to be higher than the night tide. Nobody on the east coast could tell at any particular time of the year whether the night or the day tide was the higher. It was said the morning tides were higher than the night tides, but that was simply nonsense, although at certain periods such was the case. It was not creditable, it was seriously discreditable, to the Hydrographic Department that they had not made a thorough investigation of the tides, and included them in the Admiralty tide-tables. The Indian Government was in advance of the home officials, having successfully investigated the diurnal tides in India, and published proper tide-tables.

In responding to a vote of thanks, Sir WILLIAM said he thought that in the matter of the tides the Admiralty should take the initiative, but, instead of that, they had not attempted to do anything, while private individuals were busily engaged in investigations.

Captain A. W. BAIRD, R.E., then read a paper on "Tidal Operations in the Gulf of Cutch by the Great Trigonometrical Survey of India." The primary object of the operations in question was to determine whether secular changes in the level of the land at the head of the Gulf are taking place. Colonel Walker, the superintendent of the Great Trigonometrical Survey of India, at first intended to restrict the observations to a few weeks, but he found that by extending them to a period of a little over a year, scientific results of the highest value would be obtained, and also that this course would be necessary to obtain data sufficient to detect minute changes in the relative level of land and sea. Captain Baird was ordered to make a reconnaissance of the Gulf of Cutch to select sites for tidal stations. He cruised about for a month in a common native sailing boat, and after long searching along the muddy foreshores he found three places well adapted for such stations, which were accordingly established. A detailed account was given of the apparatus used and the difficulties which had to be encountered; and in regard to results, the paper stated that Captain Baird has reduced the whole of the hourly values of the movement of the wind into the N. and E. components, and by treating the difference of the mean of the whole year from each hourly mean of the barometer and movement of wind, and the differences of the theoretical from actual tidal heights, he hopes to evaluate some results of considerable importance. Some of the tracings of the tidal curves were exhibited, and show how perfectly the instruments must have worked.

In Section C (Geology) a paper was read by Mr. CROLL, of the Geological Survey of Scotland, "On the Tidal Retardation Argument for the Age of the World." Many years ago, Dr. Croll remarked, Sir William Thomson demonstrated from physical considerations that the views which then prevailed in regard to geological time and the age of the globe were perfectly erroneous. His two main arguments were—first, that based on the limit to the sun's possible age; and secondly, that based on the secular cooling of the earth. More recently Sir William had advanced a third argument based on tidal retardation. It was well known that owing to tidal retardation the rate of the earth's rotation was slowly diminishing, and therefore if one went back many millions of years, the earth must then have been rotating much faster than now. Sir William's argument was that, had the earth solidified several hundred million years ago, the flattening at the poles and the bulging out at the equator would have been much greater than they were found to be. Therefore seeing the earth was so little flattened, it must have been rotating, when it became solid, at very nearly the same rate as at present. And, as the rate of rotation was becoming slower and slower, it could not have been so many millions of years since solidification took place. A few years ago he (Dr. Croll) ventured to point out what appeared to be a very obvious objection to the argument, and as the validity of the objection, so far as

he was aware, had never been questioned, he had been induced to believe that the argument referred to had been abandoned. But he found that Professor Tait, in his work on *Recent Advances in Physical Science*, restated that argument of Sir William Thomson's as perfectly conclusive, and made no reference to his (Dr. Croll's) objection which was as follows:—It has been proved by a method pointed out a few years ago, and which was now generally admitted to be reliable, that the rocky surface of the globe was being lowered on an average by subaërial denudation at the rate of about one foot in 6000 years. It followed, as a consequence, from the loss of centrifugal force resulting from the retardation of the earth's rotation occasioned by the friction of the tidal wave, that the sea level must be slowly sinking at the equator and rising at the poles. This, of course, tended to protect the Polar regions and expose equatorial regions to subaërial denudation. Now, it was perfectly obvious that, unless the sea level at the equator had in consequence of tidal retardation been sinking during past ages at a greater rate than one foot in 6000 years, it was physically impossible that the form of the globe could have been very much different from what it was at present, whatever might have been its form when it consolidated, because subaërial denudation would have lowered the equator as rapidly as the sea sank. But in equatorial regions the rate of denudation was, no doubt, much greater than one foot in 6000 years, because the rainfall was greater than in temperate regions. It had been shown that the rate at which land was being lowered by subaërial denudation was mainly determined not so much by the character of its rocks as by the sediment-carrying power of its river systems. Consequently, other things being equal, the greater the rainfall the greater would be the rate of denudation. They knew that the basin of the Ganges, for example, was being lowered by denudation at the rate of about one foot in 2300 years, and this was probably not very far from the average rate at which equatorial regions were being denuded. It was, therefore, evident that subaërial denudation was lowering the equator as rapidly as the sea level was sinking from loss of rotation; and that, consequently, they could not infer from the present form of the globe what was its form when it solidified. So far as the tidal retardation could show to the contrary, its form might have been as oblate as that of the planet Jupiter when solidification took place. There was another circumstance which must be taken into account. The lowering of the equator by the transference of material from the equator to higher latitudes must tend to increase the rate of rotation, or, more properly, it must tend to lessen the rate of tidal retardation.

In Section E Captain EVANS, the President, replied to Sir William Thomson's remarks on the neglect of the Admiralty as regards the investigation of tides. He said that forty years ago Sir John Lubbock and the Master of Trinity, Dr. Whewell, commenced a series of investigations on the tides, and more especially those of the British Isles, and they were assisted in every particular by the Admiralty, and more especially by the Hydrographic Department. On the lines laid down by those two philosophers, observations had been taken to the present day, and tables published. These tables were made annually; there was constant communication with all the stations over the country, and every means had been taken to render them of the most perfect character. Sir William Thomson had invented a most remarkable machine for calculating the tides, and the Hydrographic Department would be prepared to adopt whatever results might come from the use of it. But there was one thing which it did not do, and which the Admiralty tide-tables did in the most complete manner—namely, calculate the movement of the tides round the coast. No machine could do that. This was considered so important a point in 1862 that the Admiralty employed a vessel for a number of years solely and specially to undertake this investigation, and the Transactions of the Association of 1851 contained most important observations on this point made by the officer employed by the Admiralty authorities. In these circumstances, he could not but think it was ungracious of Sir William Thomson to say that the Admiralty had neglected this matter.

In Section D (Zoology), on September 8th, Mr. GWYN JEFFREYS read a very interesting paper on the biological results of the cruise of H.M.S. 'Valorous' in Davis Straits, and across the Atlantic in 1875. After a narrative of the cruise he stated that the 'Valorous' secured 183 species of marine mollusca, most of which were European in their character. Dr. CARPENTER also contributed a paper on the arenaceous foraminifera collected by the 'Valorous,' of which, he said, he had discovered a very interesting series. One curious fact connected with these foraminifera was that they shared the tendency of everything to pass into something else. In the course of his remarks he exhibited a number of the forms in question, pointing out how wonderfully delicate they were, and how closely they resembled the shelly foraminifera.

Sir WYVILLE THOMSON said there was a great number of the specimens encountered by the 'Valorous' which had also been found by the 'Challenger' Expedition. These facts went to show that the deep sea fauna on which they had encroached to so great a degree that they should soon be able to submit at least a preliminary list, was very widely distributed. As to the foraminifera which Dr. Carpenter had brought under notice, he admitted that a great many of these were not matched by anything got by the 'Challenger,' but at the same time it was a familiar fact to those on board the 'Challenger' that in the northern seas these arenaceous forms were very highly and fully developed.

Mr. JOHN MURRAY, of the 'Challenger' Expedition, submitted notes on oceanic deposits and their origin.

Commander CAMERON read his paper on his African discoveries on the 8th of September, in Section E. He first pointed out his route from Zanzibar westwards, round the Tanganyika, to Benguela. He thereafter gave a detailed account of his journey, of the places through which he passed or at which he touched, of the geographical and geological formation of the line of country over which he travelled, and of the character and habits of its inhabitants, and the nature of its productions and trade. The result of his journey was, he said, almost definitely to settle the line of the Central African rivers and lakes. The two chief products of Central Africa at the present time were, he said, ivory and slaves; and the Arab and Portuguese traders who had penetrated into the country carried on the ivory trade principally as an accompaniment to their search for slaves. It was the Portuguese chiefly who traded to Katanga, which they reached from Benguela on the West Coast, while the Arabs coming from the East Coast had penetrated well into the centre of the country, to the west of the Tanganyika, and even so far north as to hear news of the Arab and Turk traders who descended from the north upon the Albert and Victoria Nyanza, also in search of ivory and slaves. Before reaching Tanganyika he saw nutmegs and the poppy, and this part of the country seemed to be rich in mineral products. From Katanga westwards for some distance there were large copper mines, from which the Portuguese traders drew supplies. In the Tanganyika country coal was to be found. Cinnabar was to be got at Kilemba, among the sources of the many rivers there, and tin was found on the shores of Lake Kassah. The sugar-cane grew well along the whole Eastern Coast and along the Tanganyika, and rice in several places grew in wild luxuriance—in one year, as he was told, it returned a hundredfold under cultivation; and wheat was cultivated in other places. Cotton, too, grew well in many parts—all along the valley of the Congo, Lualaba, and Zambezi. In one of the islands of the Tanganyika

he found hemp growing to a great height. The whole of this country was at present just one vast slave field, and there would be no great navigable difficulties in the way of opening it up. All the various products he had mentioned were there lying waiting for any one to come and take them away, and the way to stop the slave trade was to open up the great River Congo and its sister River Zambezi. They could get right across the continent by a system of water navigation which had no second in the world; and by these rivers also they might get at the country from which Egypt drew the greater part of its ivory. But ivory was not the chief wealth of Africa; it was her vegetable and mineral products, and education would make her people very industrious—which indeed they now were where not spoiled by the slave trade. If any large scheme were framed to utilise this great water communication, Africa might be opened up in two or three years. Of course money was wanted, and oxen to work.

The PRESIDENT thought the meeting would be glad if Commander Cameron would inform them by what gentle means he was enabled to pass through Africa without coming into hostile contact with the natives.

Commander CAMERON said they must remember that a man, although a black, was always a man just as much as a white man—and the proper way to get on with the natives was to behave like a gentleman, and to remember that they understood one's being a gentleman. He also very well knew that any force he might use unnecessarily or unwarrantably would most likely retard the advance and endanger the safety of his successors in African travel.

Captain VERNEY, R.N., said he had been very much struck with the great tact that must have been required in dealing with the natives.

Major-General Sir JAMES E. ALEXANDER, K.C.B., also bore testimony, as an old African traveller, to the merits of Commander Cameron, and at the same time referred to the tact which Colonel Gordon was displaying in his dealings with the African people. He was convinced that, with proper dealing towards the natives, there was no need of shooting and violence.

In reply to a question whether, in order to put a stop to the slave trade, it would not be possible to introduce gunboats into Lake Nyassa, and thence into the Tanganyika,

Commander CAMERON said the plan could be carried out with very great prospect of success. There would be no great difficulty in carrying a steamer into and from the Nyassa to the Tanganyika; and it might also be possible to introduce the steamer from the Tanganyika into the Congo, and thence to carry it to the coast. From both coasts, at any rate, a united service of boats might effect the purpose of establishing across Africa a direct line of communication, and stations which should protect legal traffic and put a stop to the slave trade.

Two papers were read in Section E on New Guinea. The first, by the Rev. OCTAVIUS STONE, embodying the results of a recent exploration by himself and party of the Eastern Peninsula of the Gulf of Papua, as also of part of the western coast of the gulf. His impression of the western coast was that it would prove a grave to such Europeans as should choose to reside there. The Owen Stanley Mountains ran through the centre of the country, from south to north, and the east country was on the whole favourable to cultivation, and probably possessed great mineral wealth. It accordingly offered sufficient inducement for colonisation, but colonisation, if attempted, would require to be set about with much previous consideration, owing to the peculiar situation of the peninsula and the circumstances of the people.

The second paper was on his recent explorations in North-West New Guinea by Signor C. E. CERRUTI. He said his experiences in this portion of the world had convinced him that it should, before long, be occupied by some civilised nation. After several visits to the islands and part of the mainland on the north, he was, in 1869, sent out by Count Menabrea for the purpose of making investigations preliminary to the formation in New Guinea of a penal settlement. He secured at the same time means for turning his expedition to profit geographically. He believed that a great part of the region from the Zulla Islands to New Guinea, and perhaps more to the north, had been subject to very important volcanic action in an epoch not very far distant, and one could see the work now going on—the western coast showing gradual subsidence. But whatever the origin of the islands, they were now covered with a vegetation which he had not found equalled in luxuriance in any part of the world. One fallen tree he measured was 56 or 57 yards long, and that was not exceptional. Even in its wild state the vegetation produced much more than was necessary to meet the necessities of the inhabitants, and if scores of millions of new inhabitants were sent out they would easily find food and the means of bettering their position. Cattle and sheep were easily bred there. The race indigenous to the island was the Papuan, and just now he calculated the wealth of this great tract of land was wasted by perhaps 50,000 inhabitants, who were in a wild state, and dangerous to civilisation. His proposal would be to begin the civilisation of the country from M'Lure's Bay.

Colonel PLAYFAIR read an interesting paper in Section E on "Travels in Tunis in the footsteps of Bruce," Mr. KERRY NICHOLLS, on the "Islands of the Coral Seas," and Professor PORTER on "Some Points of Interest in the physical conformation and antiquities of the Jordan Valley."

Mr. A. BOWDEN gave an account of "A New Route to the Sources of the Niger." Starting from Sierra Leone, on the West Coast of Africa, he recently made several advances into the interior, with the general result of his becoming satisfied that from this direction could be obtained a ready access to the interior, affording a new and important route to the sources of the Niger. He was confident that if the method of conciliation adopted towards the natives by Commander Cameron were maintained, there would be no insuperable difficulty in the way of the successful solution of the Niger problem; and, from the present comparatively pacified state of the coast tribes, he anticipated that the hostility previously shown to the entrance of white men into their country would not be found to exist in any great degree. In answer to a question from Canon Tristram, he said he had watched the native industries with close attention, and considered with great care the question of whether those tribes had a future before them, or whether they were now in a state of decadence. They had several industries, of which that of weaving with a loom and pottery making were perhaps the most interesting. The latter, at any rate, bore indications of Egyptian or Eastern origin. On the whole, there was so far insufficient material to enable him to solve the question.

The SECRETARY, in the absence of the author, then read a paper by Lieutenant W. H. Chippindall, R.E., containing "Observations on the White Nile between Gondokoro and Apuddo." The object of the paper was to establish Lieutenant Chippindall's opinion that the oft-repeated assertion that the White Nile could not be navigated higher up than Gondokoro had no warrant in fact. The Lieutenant had been a member of Colonel Gordon's expedition for the Khedive of Egypt, and the operations of that expedition had clearly proved that the river was navigable much beyond that point. He was sure the White Nile was navigable all the way up to the Albert Nyanza, and that actual proof of this opinion was delayed only by the hostility of the natives, and the destruction of an advance party of Colonel Gordon's troops.